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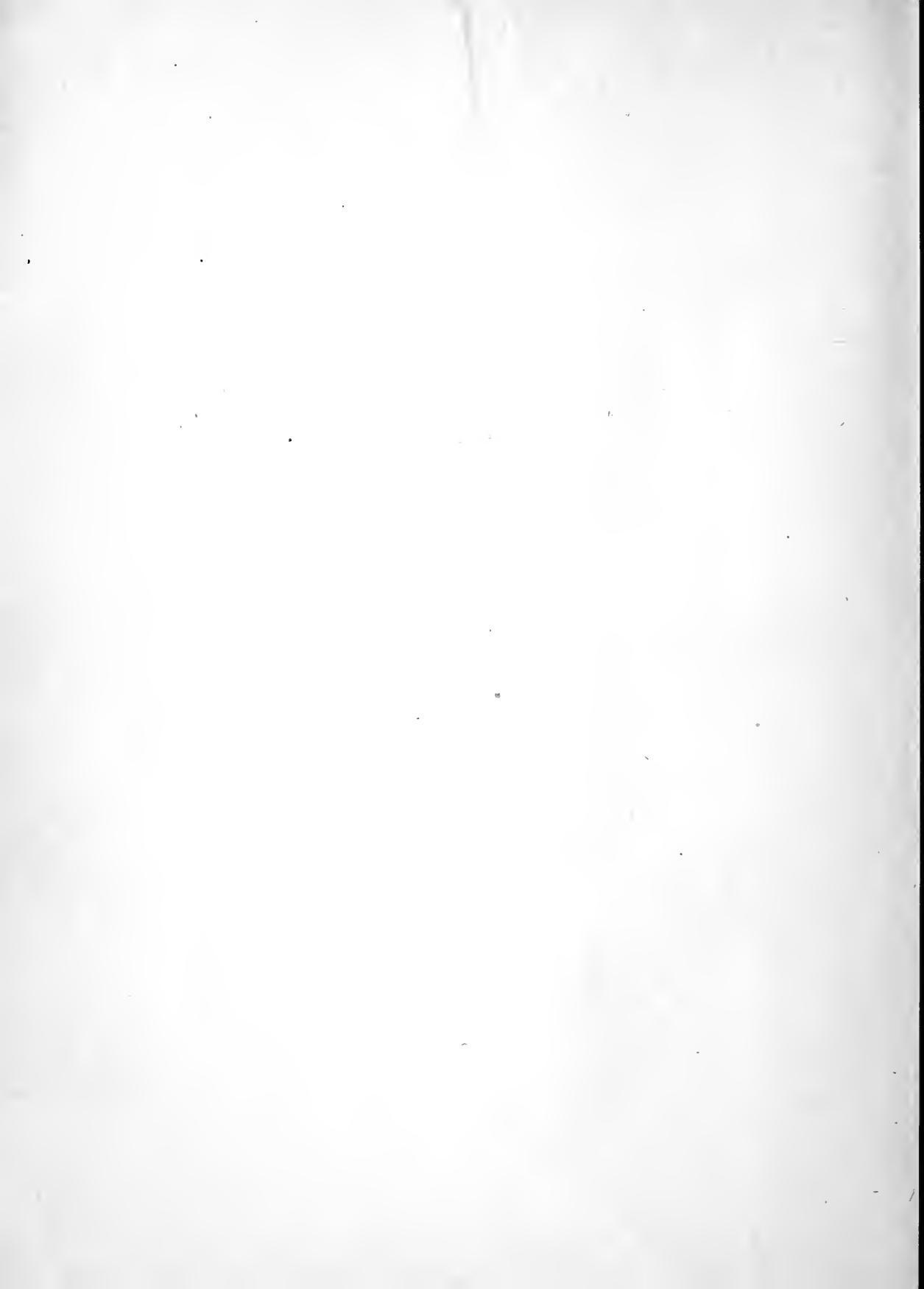
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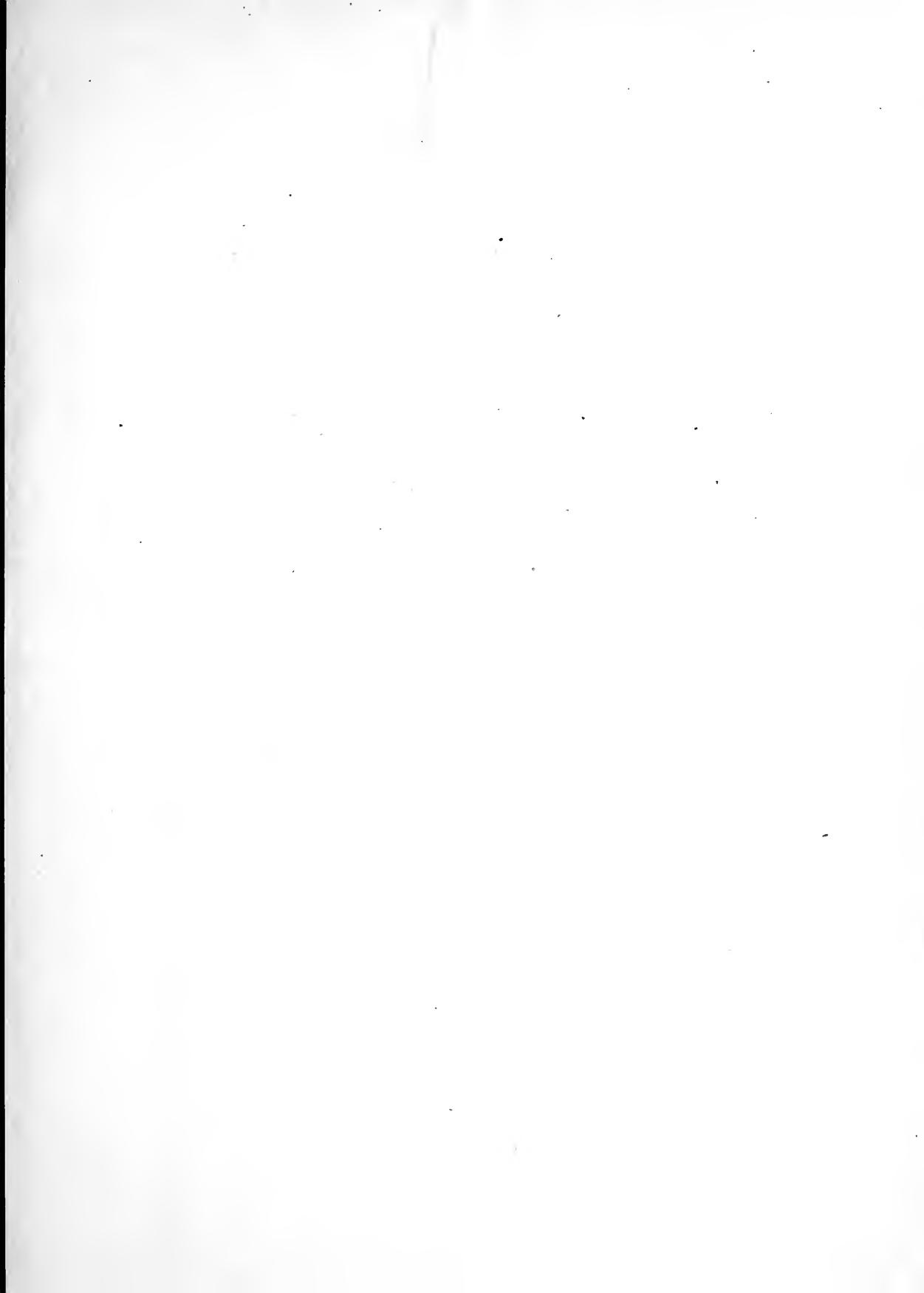
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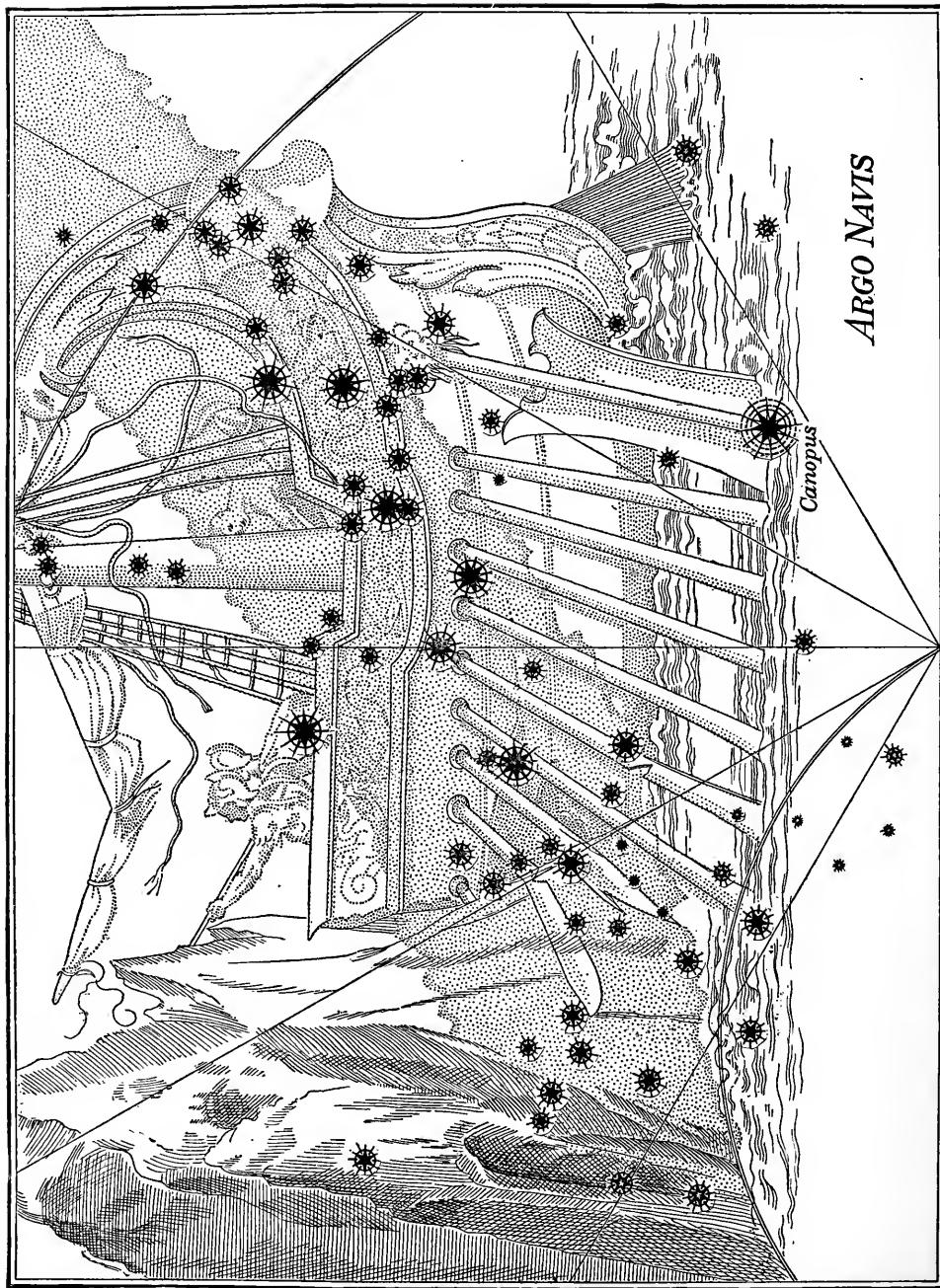
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THE STARS IN SONG AND LEGEND

BY

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WITH ILLUSTRATIONS FROM THE DRAWINGS OF

ALBRECHT DÜRER

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PREFACE

I HAVE attempted in this little volume to present the legendary lore of the heavens in such a way as to attract the unprofessional reader. By numerous poetical quotations I have tried also to show the intimate connection of the stars with the best and highest in literature. The book embodies to a considerable extent the material that I have collected on this subject in the course of many years' lecturing to college classes, though I have made free use also of that encyclopedic work on *Star Names and their Meanings*, by R. H. Allen, published only a year or two ago. So exhaustive is the treatment of the constellations in Mr. Allen's book, that there might seem small excuse for again presenting the subject; but the very completeness of that volume will render it less useful to many who might be interested in a briefer and more popular account of the star legends.

I wish also here to record my indebtedness to Sir Norman Lockyer's *Dawn of Astronomy* for much interesting information concerning sun worship among the ancients. I have consulted, besides, many of the older standard works on mythology and on the constellations.

Most of the quotations are taken directly from the originals, though in a few cases I have copied these from Smyth's *Cycle of Celestial Objects* or from Mr. Allen's work.

The Latin forms of classic names have in general been adopted; and care has been taken to avoid as far as possible the introduction of Greek words or technical terms which would puzzle the unscientific reader.

JERMAIN G. PORTER.

JUNE, 1901.

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INTRODUCTION

ASTRONOMY as usually taught is purely a nature study. Viewed solely in that light, none certainly will dispute its educational value. To a far greater extent than any other science does it enlarge the mind and give a true conception of the relation of man to his physical environment. A liberal education implies some general knowledge, at least, of the wonderful revelations of modern astronomy.

But astronomy possesses an interest for the student also from other points of view. Its great antiquity, for instance, renders it worthy of attention historically. Unlike other branches of science, which, for the most part, are but of yesterday, the science of the stars may be traced backward till its beginnings are lost in the mythological and the fabulous. It is not, however, the formal history of astronomy that I now refer to, so much as the general relation of the progress of astronomical ideas with the growth of civilization. It will, in fact, be found that the knowledge of practical astronomy possessed by a people forms a very good criterion of their advancement in those arts which minister to physical well-being. Among savage tribes the heavenly bodies may be

regarded with awe, and even worshiped ; but their motions and their relations to the form of the earth are not understood, and hence cannot be employed for the accurate reckoning of time, for navigation and surveying, with all the attendant advantages. Throughout historic times the connection has always been very close between the intellectual activity which has sought to wrest the secrets of nature from the stars, and the industrial activity which has manifested itself in exploration and extended commerce.

To take one illustration, why was the discovery of the western continent so long delayed ? We admire the splendid civilizations of classic times. Why was it that clouds and darkness then enveloped four-fifths of the earth's surface ? Why could not the art which built the pyramids, or the skill that clothed the hills and vales of Greece with beauty, or the administrative power that made Rome the mistress of the nations, have pierced also the secrets of the ocean and brought to light the continents and islands embosomed in its heaving billows ? Why was Atlantis but a myth, and the outlying waters so full of terrors to the imagination of the ancient mariners that they only groped along the shore ? We readily find the explanation in the crude notions regarding the figure of the earth which still enchainèd the popular mind.

The ideas of those philosophers of the Augustan age, who had already perceived the truth on this subject, failed to gain

general acceptance and were soon lost amid the darkness of scholasticism. Only with the revival of learning and the renewed study of the Greek classics did they again appear and begin to influence the thought of the age. Even in the time of Columbus the figment of a flat earth surrounded by an ocean stream was still so prevalent that, as we know, it was with the greatest difficulty that he obtained the means to fit out his vessels or the crews to man them. But for his thorough belief in the most advanced astronomical teaching of his day, we may be sure he would never have ventured upon his momentous voyage.

Again, astronomy possesses an interest from what we may call the aesthetic point of view; and this is the phase of the subject which it is desired particularly to present in this book, though it is also true that the mythology of the heavens throws much light on the historical development of the science. In all ages the celestial bodies have been objects of admiration, yet no doubt this was so more universally in the infancy of the race than in modern times. The progress of civilization tends to wean us away from nature. We do indeed make use of her forces and her laws, but the knowledge and skill which such use implies and necessitates are confined mostly to scientists and inventors; and the scientific spirit which insists on uncovering all the secret springs of the cosmos reacts also on the popular mind and leads to unromantic views of nature. The rising and setting of the

sun, the waxing and waning of the moon, the solemn march of the glittering star host across the firmament, are taken as matters of course and excite no wonder and inspire no awe.

Very different was it in the early days, when nature was not regarded as one vast machine wherein each part and each movement were articulated with all the rest, but rather as a series of phenomena with special relations and individual significance. In the case of the heavenly bodies this view would naturally lead to their deification and worship. More especially would this be true because of the seemingly intimate connection not simply of the sun, but of the stars as well, with the changes of the seasons and the varying round of human activity associated therewith. That this worship of the sun, moon, and stars was well-nigh universal, we have abundant evidence. Even the Israelites had to be cautioned many times against the practice, as in Deuteronomy iv. 15-19: "Take ye therefore good heed unto yourselves . . . lest thou lift up thine eyes unto heaven, and when thou seest the sun, moon and stars, even all the host of heaven, shouldest be driven to worship them, which the Lord thy God hath divided unto all nations under the whole heaven."

Although such worship was frequently accompanied by cruel and shameful rites, nevertheless the beauty and dignity of the objects, together with their exalted position and mysterious yet beneficent influence, certainly redeemed this species of idolatry from the grossness and degrading character of

some other forms, — as, for instance, the worship of animals and reptiles.

In this deification of the celestial bodies many of the legends relating to them had their origin. These old stories, wild and fanciful as they are, reveal to us the thoughts and feelings with which primitive man gazed into the sky, and the relations and influences which he there traced. While they contain much that is crude and even ridiculous, we may discover also many beautiful ideas and ennobling conceptions. It is certainly worth while to study these legends, both because of their intrinsic interest, and for the view they give us of the weak, but none the less honest and earnest efforts, which our remote ancestors made to solve that complex, momentous problem, the relation of heaven to earth.

Not all the star legends, however, come to us from antiquity. We meet them in the folklore of more recent periods. In the far north and in the sunny south, among the wild aborigines of the continents and islands of the sea, as well as the peasantry of the more civilized nations, these stories concerning the sky and its inhabitants are current. Then, too, the literature of modern times abounds in references to the constellations and the myths associated with them. It is impossible to read understandingly a poet like Tennyson, with his constant allusions to classic mythology, or Longfellow, whose verse mirrors in numberless instances the beauties of the starry firmament, without some knowledge not simply of

astronomy as a science, but of the legendary lore connected with it.

It is in the hope of leading the reader to a fuller appreciation of the poetry of the sky, as well as to a greater interest in the stars themselves, that this little book has been written. Emerson in his essay on Nature says: "If the stars should appear one night in a thousand years, how would men believe and adore, and preserve for many generations the remembrance of the city of God which had been shown ! But every night come out these envoys of beauty, and light the universe with their admonishing smile." And, alas ! too often we pay them scant heed. Even though our minds be unscientific, and the dry facts of astronomy do not appeal to us, let us at least familiarize ourselves with the face of the sky ; let us make friends with those mysterious giant figures that people its depths, so that whenever we lift our eyes and behold them shining down from their serene heights of ether, we shall recall the wonderful legends told of them in the long-ago, and the beautiful fancies which they have inspired in the poetic soul of every age.

When I survey the bright
Celestial sphere,
So rich with jewels hung, that night
Doth like an Ethiop bride appear;
My soul her wings doth spread,
And heavenward flies,
The Almighty's mysteries to read
In the large volumes of the skies.

WILLIAM HABINGTON, 1605-45.

THE STARS IN SONG AND LEGEND

THE DAY-STAR—SUN MYTHS AND SUN WORSHIP

One sun by day, by night ten thousand shine,
And light us deep into the Deity;
How boundless in magnificence and might!

YOUNG—*Night Thoughts*.

THERE can be no doubt that the sun was the first of all the celestial bodies to be observed and studied. The mysterious thoughts and unanswerable questionings which its rising must have excited in the mind of the primitive philosopher are well voiced in the poems of Ossian:

Whence are thy beams, O Sun, thy everlasting light?
Thou comest forth in thy awful beauty; the stars hide themselves in the sky; the moon, cold and pale, sinks in the western wave; but thou thyself movest alone.

It is impossible for us, with our accurate knowledge of the natural causes that produce the phenomenon of day and night, to appreciate the feelings of our remote ancestors as the great orb of day sank below the horizon. How almost death-like must have seemed the darkness that settled over the landscape, and how tremendously important the coming of the dawn and the return of day! That divine honors should be paid to the great source and dispenser of light and life was inevitable.

Sun Worship in India.—Evidences of this sun worship can be found in nearly every nation of antiquity. The Vedas contain hymns to the sky, to the dawn, and to the sun, forming a kind of ritual, which was chanted by the priests at sunset and sunrise. The burden of these hymns is the universal conflict between good and evil as typified by the struggle between light and darkness. “Will the dawn return? Will the sun again rise? Will the powers of darkness be conquered by the god of light?”

Professor Max Müller thus characterizes this primitive literature: “I look upon the sunrise and sunset, on the daily return of day and night, on the battle between light and darkness, on the whole solar drama

in all its details that is enacted every day, every month, every year, in heaven and in earth, as the principal subject."

Egyptian Ideas of the Sun-God; the Myth of Horus.— While the Vedas carry us back more than three thousand years and give us some insight into the forms of worship prevailing among the ancestors of our own Aryan race, in the Nile country we can trace the evidences of a similar cult to a period even more remote. By the Egyptians the sun was worshiped, not simply as the general source of light; they distinguished various forms of the sun-god, depending upon the positions occupied in its daily course. The rising sun was Horus, the child-god; Amen Ra, the sun in his noontide strength; and Osiris, the setting sun, dying and passing into the under-world of darkness. The deity that presided over this under-world was Typhon, and we find him symbolized by the circumpolar constellations. These constellations never set, and are consequently always visible when the sun is absent from the sky. To the untutored mind there came naturally, therefore, to be an antithesis between the two. The relations, as they existed in the thoughts of those primitive peoples, between the rising and

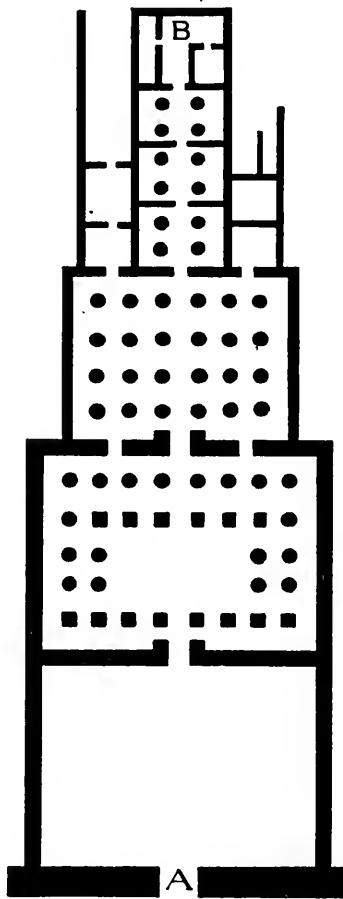
setting sun and the powers of darkness that ruled the night were beautifully set forth in the Myth of Horus.

This legend, depicted on the temple walls, is exceedingly ancient, going back perhaps as early as 5000 B.C. It represents Horus, the rising sun, battling with and slaying Typhon, the god of darkness, in the form of a crocodile or hippopotamus, to revenge the death of his father Osiris, the setting sun. The astronomical significance of the myth is very plain. The rising sun blots out or destroys the circumpolar constellations, symbolized by the crocodile or hippopotamus ; these in their turn being responsible for the disappearance and death of the setting sun.

Orientation of Egyptian Temples.—It is a well-known fact that the pyramids stand square with the points of the compass, and therefore face sunrise at the time of the equinox. But the pyramids do not represent by any means the oldest civilization of Egypt. Among the temple remains in Upper Egypt are some whose ruins must have been already hoary with the dust of centuries when the pyramid builders began their work. When these ruins were first explored and mapped, their arrangement greatly puzzled archæologists ; they

seemed to have been set down haphazard, facing indiscriminately in all directions. Later and more careful study has revealed the interesting fact that these temples were erected for the purpose of observing the rising or setting of different heavenly bodies. Indeed, in some respects they resembled gigantic telescopes. Their ground plan was such, with chamber and ante-chamber connected by ever-narrowing apertures, that a beam of light entering through the outer *pylon* would pass along the whole length of the temple, until finally it penetrated to the inmost sanctuary and there formed an image of the luminous object upon the wall.

Some of these structures were used for observing the sun, others for the stars. It was found that many of the solar temples faced the sunrise or sunset



GROUND PLAN OF TEMPLE AT

THEBES (LEPSIUS)

A. Pylon

B. Inner sanctuary

at the time of the summer solstice. The motive that suggested this arrangement we can readily understand. The rising of the Nile was to the Egyptians the most important event of the year, and this rise during all historic time has begun very near the solstice. The priests, in the absence of an accurate calendar, were enabled to determine the time when the inundation was due by watching from their temples the gradual northward movement of the sun. No doubt the temples of this class played a prominent part in the ceremonies connected with the great annual festival which celebrated the approach of the life-giving flood.

Other temples were oriented to the winter solstice. Here, too, the motive is not far to seek. As the sun was the personification of all good, its gradual sinking downward in the south, causing shorter days and a longer reign of the nocturnal powers of darkness, was naturally regarded with foreboding and dread. The cessation of this southward movement and the beginning of the sun's return were hailed with gladness and made the occasion of joyous festivities.

Solar Temples in Greece.—Although the worship of the sun was perhaps more thoroughly organized and

attended by more elaborate ceremonies in Egypt than elsewhere, yet traces of this cult may be discovered in nearly every land. Recent investigations have shown that almost all the Grecian temples were oriented so that the sunlight might enter them at some time in the year. While the artistic spirit of the Greeks transformed the Egyptian architectural ideas of massiveness and mystery into those of grace and beauty, yet the one fundamental thought remained the same,—an unobstructed axis, so that the sun's rays might pierce through to the *cella* and render glorious the statue of the god there erected.

The sun's representative in the Greek pantheon was Helios, afterwards identified, partially at least, with Phœbus Apollo. According to the later poets, he inhabited a splendid palace somewhere below Colchis, to which, after his daily drive in a glowing chariot across the sky, he was conveyed in a winged boat of gold along the northern coast of the Euxine sea.

Baal Worship.—The Phœnicians worshiped the sun under the name of Baal. The Moloch of the Ammonites and Chemosh of the Moabites were probably variant names of the same deity. From these nations the Israelites borrowed their idolatrous practices. Some have

thought that the Beltane, or sacred fire of the Celtic nations, was a survival of Baal worship. However this may be, it is certain that the sun was reverenced among these peoples, and yearly festivals in his honor were held.

The Druids. — The priests of this worship were the Druids. They seem to have erected no temples, but to have performed their rites under the open sky. The



STONEHENGE

immense circles of standing stones, of which Stonehenge on Salisbury plain is the most famous, probably marked their sacred places. The circular arrangement

of these monoliths in itself suggests a connection with the worship of the sun, and this idea has received confirmation by the discovery that the single large rock lying in the avenue which forms the approach to Stonehenge is so placed that, as the sun rises on mid-summer's day, its shadow falls upon the central altar. The Druids, like the Egyptian priests, no doubt determined in this way the turning point of the year. Mrs. Hemans thus refers to this Druidical worship :

Where the Druid's ancient cromlech frowned,
And the oaks breathed mysterious murmurs round,
There thronged the inspired of yore, on plain or height,
In the sun's face, beneath the eye of light,
And baring unto heaven each noble head,
Stood in the circle, where none else might tread.

Scandinavian Myths. — In the cosmogony of the northern nations the sun naturally played a prominent part. The conflict of the wild, bitter forces of the north with the genial, radiant influences of the south resulted in the birth of the world and its inhabitants. Night was of the race of the giants, and Day was her son. To them the All-father gave chariots and horses. As Night courses across the sky the foam from the mouths of her steeds flecks the earth with rime-drops. Following

close in her tracks comes the fair youth Day, and the light which streams from the glowing manes of his horses illumines the sky and the world.

It is a somewhat curious fact that, according to the Norse mythology, the end of the world, as well as its beginning, will be due to the agency of the fire principle. The personification of this principle is Loki, who at first was beneficent, but fell from his high estate and became destructive like a raging flame. His progeny will finally, in the "twilight of the gods," prevail over the other deities, devouring the sun, moon, and stars, and scattering abroad firebrands which will burn up, not only the world, but even Valhalla itself. Among the Scandinavian as well as the Celtic peoples, the worship of fire and sun seems to have been very prevalent.

Peruvian Sun Worship.—Again, in far-away Peru, the Spanish conquerors found this cult well organized with elaborate ceremonials. The Incas claimed to be the children of the sun, and his worship was their peculiar care. In Cuzco, the capital, stood a splendid temple with an image of the sun in solid gold upon the western wall. When the huge doors of the eastern portal were thrown open, the rays of the rising sun

fell full upon this image, which shone with dazzling splendor. All of the implements and ornaments of the temple were likewise of gold. In the figurative language of the people, gold was the “tears wept by the sun.”

Orientation of Christian Cathedrals.—We thus see how exceedingly widespread was the worship of the great luminary. It is not surprising that upon the introduction of Christianity the usages incident to sun worship could not be wholly displaced, but were to some extent retained and adapted to Christian ideas. The medieval cathedrals, for instance, like the temples of Egypt and Greece, were oriented to the sunrise. The old basilica of Saint Peter at Rome was so exactly aligned to the east, that when the great doors were opened on the vernal equinox, the sun’s rays penetrated straight through the nave and illuminated the high altar. From the fifth century to the Renaissance this practice was generally carried out, many even of the old English cathedrals facing either due east or to the point of sunrise on the festival of their patron saint. The mystical reasons given in defense of this custom were that the Saviour on the cross had his face toward the west ; hence the Christian’s sanctuary should have its

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outlook to the east, where also in the last day Christ will descend from heaven.

But what necessity for explanation or apology ? Where in all nature shall we find a more fitting type of the Uncreated Glory than in the sun ?

LUNAR FABLES AND FANCIES

The silver-footed queen.

HOMER.

All night, through archways of the bridgéd pearl
And portals of pure silver, walks the moon.

TENNYSON—*Sonnet.*

Moon Worship among the Ancients.—The moon, like the sun, had her worshipers. Astarte, the beautiful but licentious Syrian divinity, called by the Hebrews Ashtaroth, or the Queen of Heaven, was a moon goddess. In Greece she became Selené, and with the Romans, Diana. Following classic mythology, we make the moon feminine, but this usage is not by any means universal. In the Scandinavian myths the moon is a god and the sun a goddess. The same inversion of gender is found also among the Arabians, the Aztecs and Hindus. Possibly the lugubrious and unmistakably masculine countenance which the full moon shows, may be to some extent responsible for this practice. Yet, curiously enough, the picture seen in the lunar spots has not been so generally a human

likeness. The folklore both of the eastern and the western world has associated them far more frequently with the hare.

Legend of Buddha.—According to a Hindu legend, Buddha, in an early stage of his existence, was a hare traveling in company with an ape and a fox. The god Indra, disguised as a beggar, asked them for food, and the three went out to seek it. The hare alone returned from his quest unsuccessful ; and not wishing to seem lacking in hospitality, ordered a fire built, and cast himself into it to roast for his guest's supper. In reward for this heroic devotion to duty, the god placed him in the moon. Other legends locate on the moon the palace of the king of the hares ; and some of the South African tribes associated the hare and the moon in their worship, and explained the markings on its face as the result of scratches inflicted by the hare in revenge for the moon's ill treatment.

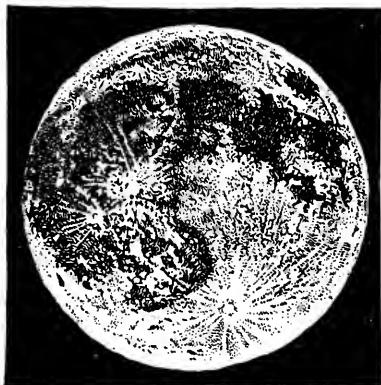
The Man in the Moon.—The “man in the moon” is so plain as to be recognizable at a glance. Various stories to account for his presence there have been current. One of the most widely prevalent connected him with the Hebrew who was stoned for gathering sticks on the Sabbath. A variation of this legend as

given by many writers is something like this: A man traveling on Sunday with a bundle on his back was met by a fairy, who asked him why he worked on the Sabbath. He replied: "Sunday on earth or Monday in heaven, it is all one to me." "Then carry your bundle forever," she answered. "As you have no regard for Sunday on earth, take your perpetual Monday (Monday) in heaven and travel with the moon." So there he still remains.

Scandinavian folklore recognizes on the moon two children bearing a pail of water suspended on a pole from their shoulders. This is probably the original of our Jack and Jill, the vanishing of one spot after another as the moon wanes, representing the fall first of Jack and then of Jill.

The Lady in the Moon.—The "man in the moon" is decidedly homely, not to say ugly; but a much more beautiful as well as more striking likeness to a human countenance may be seen by those who know where to look for it. Upon the western half of the moon, with face slightly upturned towards the east, can be traced the profile of a lovely maiden. In modern times this has received the name of Selené, the Greek title of the moon goddess. Whether it has ever been

recognized previous to our day seems to be doubtful; yet legends of fair women in connection with our



Actual Contour



The Face accentuated

THE LADY IN THE MOON

satellite are to be found in every age. In classic times we have the identification of the moon with Diana.

Queen and huntress, chaste and fair,
 Now the sun is laid to sleep,
 Seated in thy silver chair,
 State in wonted manner keep.

BEN JONSON.

Sometimes it is Diana's chariot, rather than the goddess herself, as in her wooing of Endymion told by Morris:

There came a vision of a lovely maid,
 Who seemed to step, as from a golden car,
 Out of the low-hung moon.

Then the Incas of Peru had their story of a beautiful maiden, who in the long-ago fell in love with the moon and cast herself into his arms ; while some of the Pacific islanders made the moon the rough wooer who snatched a fair bride from the earth. The Indian legend regarding the moon spots is told by Longfellow, where Hiawatha

Saw the moon rise from the water,
Rippling, rounding from the water,
Saw the flecks and shadows on it,
Whispered, "What is that, Nokomis ?"
And the good Nokomis answered,
"Once a warrior very angry,
Seized his grandmother and threw her
Up into the sky at midnight;
Right against the moon he threw her;
'T is her body that you see there."

Many other stories about these markings might be collected. All of them, of course, like the pictures one sees in the fire, are purely children of the fancy.

Supposed Resemblance to the Earth. — Vague notions of a possible resemblance to the earth seem now and then to have been entertained. The Druids, we are told, imagined seas upon its surface, and even considered it

to be the residence of happy souls who at death were borne thither on a whirlwind. But it was not until the invention of the telescope that this idea took definite shape. Milton, the contemporary of Galileo, immortalized the discovery of his astronomer friend, comparing Satan's shield to

. . . the moon, whose orb
Through optic glass the Tuscan artist views
At evening from the top of Fesolé,
Or in Valdarno, to descry new lands,
Rivers or mountains in her spotty globe.

To be sure, this likeness to the earth did not prove to be so close as the early telescopic observers fondly dreamed. Many of their beautiful fancies faded away, leaving the moon a lifeless, waterless, and airless world. What wonder that philosophers and poets, in despair at the uninviting prospect presented by science for their contemplation on the hither side of the moon, have turned for consolation to the farther side, allowing their imaginations to run riot in depicting its loveliness and splendor!

Thus Robert Browning :

What, there's nothing in the moon noteworthy ?
Nay : for if that moon could love a mortal,

Use, to charm him (so to fit a fancy),
All her magic ('t is the old sweet mythos),
She would turn a new side to her mortal,
Side unseen of herdsman, huntsman, steersman,—
Blank to Zoroaster on his terrace,
Blind to Galileo on his turret,
Dumb to Homer, dumb to Keats — him, even !
Think, the wonder of the moon-struck mortal,
When she turns round, comes again in heaven,
Opens out anew for worse or better !

• • • • •

What were seen ? None knows, none ever shall know.
Only this is sure — the sight were other,
Not the moon's same side, born late in Florence,
Dying now impoverished here in London.
God be thanked, the meanest of his creatures
Boasts two soul-sides, one to face the world with,
One to show a woman when he loves her !

— *One Word More.*

Moon Superstitions. — Modern superstitions concerning the moon are quite numerous, and much more widely credited than would be supposed possible in this enlightened age. One of the most common is the expectation of good luck if the new moon be first seen over the right shoulder. Rustic belles frequently attempt in this way to discover their future partners,

the glance at the moon being accompanied by an incantation :

I prithee, good moon, declare to me
This night who my husband shall be.

A dream is expected to follow giving the desired information.

In rural neighborhoods also the belief in the moon's influence on vegetation is very strong. The general rule seems to be that things which grow in the ground, like potatoes, must be planted in the dark of the moon, and those that grow above ground in the light of the moon. The old superstition about the malign influence of the moon on the human body is largely dispelled. Though lunacy is, perhaps, not less common than formerly, we no longer attribute it to the changing aspects of fair Luna. Not so, however, with the weather. There is never a storm nor a drought, a cold wave or hot wave, but the poor moon is held responsible. Every change of the weather, expected or unexpected, is readily accounted for by the appearance, position, or phase of the moon.

One old writer described the moon as "the great depository of misspent time, wasted wealth, broken

vows, unanswered prayers, fruitless tears, abortive attempts, unfulfilled desires and intentions." If we could only add to this list unfounded superstitions, of what a vast amount of useless rubbish should we clear the world !

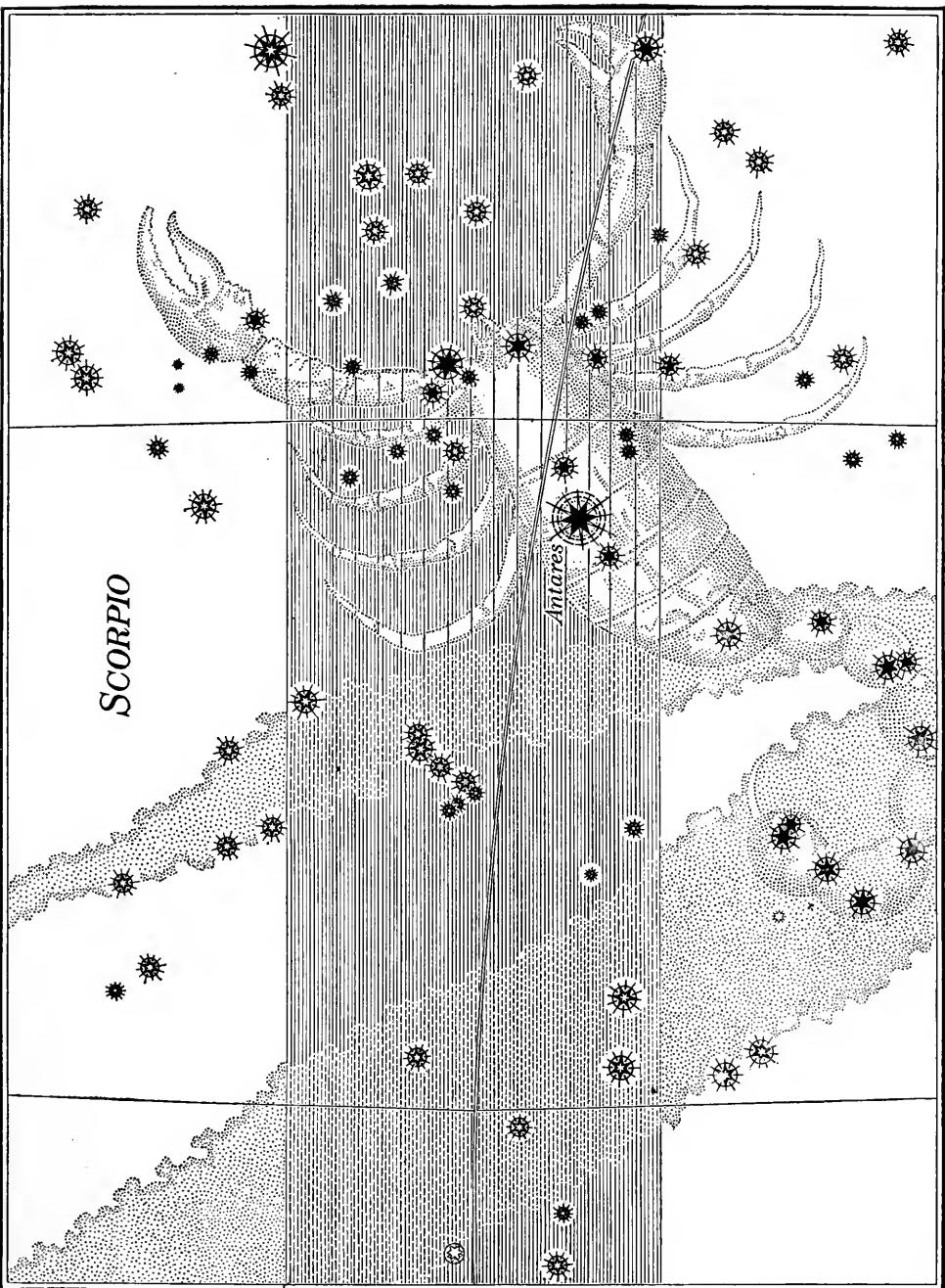
THE STARRY HEAVENS

Stars with golden feet are wand'ring
Yonder, and they gently weep
That they cannot earth awaken
Who in night's arms is asleep.

HEINE.

Number of the Stars. — When we gaze into the star-bespangled vault we are apt to experience a certain bewilderment. Those glittering gems seem to stand “thick as dewdrops on the fields of heaven,” and to be absolutely numberless. The sands upon the seashore and the stars of heaven have ever been symbols of infinitude. Thus God said to Abraham, “I will multiply thy seed as the stars of heaven, and as the sand which is upon the seashore”; and of David, “As the host of heaven cannot be numbered, neither the sand of the sea measured; so I will multiply the seed of David my servant.”

That the number of the stars revealed by the telescope does actually exceed the possibility of reckoning is absolutely true; but when we begin to count those



that can be certainly discerned with the naked eye, we discover that they are not so innumerable as they seem. Seldom can more than two thousand be distinguished at any one time ; but this number is not sharply defined, for a multitude hover just on the verge of visibility and under favorable conditions start, as it were, into being.

The Constellations. — Although scattered in apparent confusion over the sphere, yet the brighter stars form many striking configurations, which from the earliest ages have been recognized and named. The great majority of the constellations date back to prehistoric times. Forty-eight of them come down to us from days preceding those of Homer and of Hesiod. Not many of these groups show any resemblance to the objects for which they are named, and it is therefore impossible in most cases to discover the relationship supposed to exist, or the consideration which influenced the choice of appellation. Evidently imagination was the most potent factor in determining the nomenclature of the sky.

To some extent we find different systems prevailing among different nations ; but it is to Greece that we principally owe the figures which are now depicted on our celestial globes, and the many interesting myths associated with them. Not that all the constellations

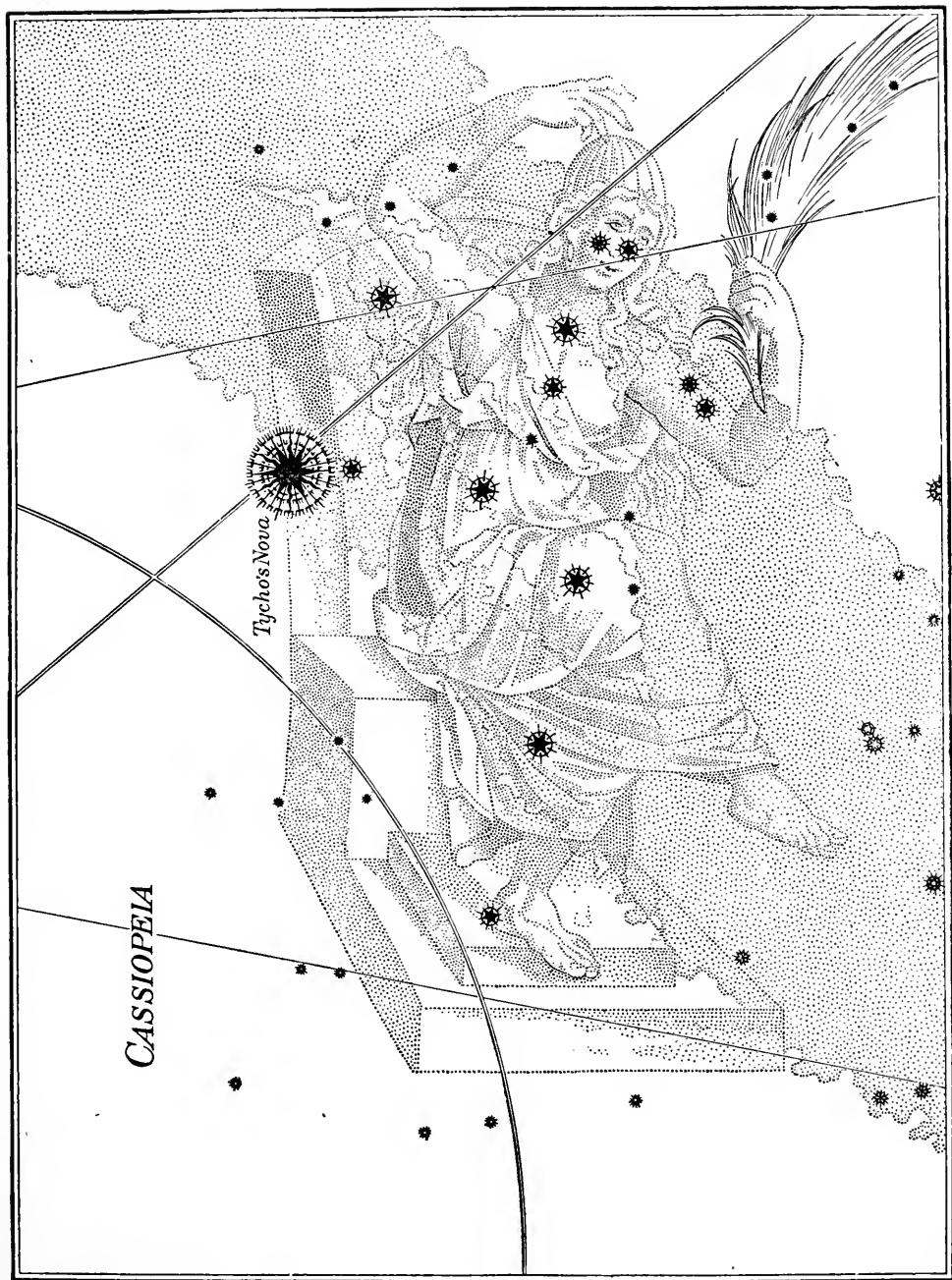
primarily originated in that country; for the Greeks, great astronomers though they were, were also great travelers, and were ever ready to borrow from other peoples and other civilizations. We know that many of their wise men visited Egypt, and brought back thence much curious information gathered in the silent, mysterious temples, or wormed out of the sphinx-like priests. Even more of their astronomical knowledge, however, was probably obtained from the Chaldeans, who were especially proficient in that science. Among the Romans Chaldean and Astrologer were synonymous terms. Isaiah also mentions Babylon as the home of the astrologers, the star-gazers, and the monthly prognosticators; and we must remember that there was then no definite distinction between astrology and astronomy. In particular, an intimate acquaintance with the constellations was requisite for the casting of horoscopes. It is, therefore, probably true, as Ideler asserted nearly a century ago, that the majority of the constellations originated on the Euphrates. With regard to the zodiac certainly, there is a general agreement of opinion among archæologists that its twelve divisions or signs, each marked by a corresponding star group, have come down to us from Accadian or pre-Babylonian peoples.

The Zodiac. — This zone or girdle, stretching around the celestial sphere, might be called the zoölogical garden of the sky, our title, zodiac, coming from the Greek and signifying “a circle of animals.” Previous to the introduction of Libra, the Scales, which occurred at a comparatively late epoch, all the signs, in fact, represented living creatures. Notwithstanding this addition, the division into twelve parts seems to have been very ancient, the Scorpion being originally a double sign and the Claws occupying the present position of Libra.

We may, no doubt, trace this duodecimal division to the twelve months which constitute the solar year ; each sign would thus measure the progress of the sun during one complete revolution of the moon. It were rash, perhaps, to ascribe the sacred character of the number twelve to this source ; yet Josephus associated the twelve stones in the breastplate of the high priest with the constellations of the zodiac ; and the twelve gates of the celestial city of Saint John’s apocalyptic vision, each several gate of one pearl, not unnaturally suggest the twelve starry portals of the sun’s annual journey. Schiller at any rate has expressed the thought :

Twelve ! twelve signs hath the zodiac, five and seven ;
The holy numbers include themselves in twelve.

For one who desires to familiarize himself with the configurations of the stars, it will be well to begin with the zodiacal constellations. Since they follow each other in a continuous belt around the sky, the recognition of a few prominent ones assists in locating the rest: thus, the Pleiades mark Taurus; Castor and Pollux distinguish Gemini; the sickle indicates Leo; Virgo may be known by the lone star Spica, Scorpio by the fiery Antares, and Sagittarius by the arrowhead. The last three, Capricornus, Aquarius, and Pisces, are less distinct, but may be traced with a little patience. Moreover, if these groups are familiar, we have celestial landmarks, so to speak, some of which are always visible; and by their help other constellations, contiguous to the north or south, may be found. Assuming that the two principal circumpolar constellations, the Great Dipper and the celestial "W," or Cassiopeia's Chair, lying on opposite sides of the pole star, are also known, the remaining regions of the sky are not so extensive but that, with the assistance of a good atlas, they may be surveyed and their mystic figures traced without serious difficulty.



ARIES, THE RAM

Now the zephyrs diminish the cold, and the year being ended,
Winter Maeotian seems longer than ever before;
And the Ram that bore unsafely the burden of Helle,
Now makes the hours of the day equal with those of the night.

LONGFELLOW — *Translation from Ovid.*

ARIES is the first sign of the zodiac. Two or three thousand years ago, when these constellations were originally fashioned, it marked the vernal equinox, the passage of the sun through which betokens the opening of spring; but owing to the precession or slow westward movement of the equinoctial points, Aries no longer occupies this place of honor but has drifted on to the eastward. Spenser in the *Faërie Queene* very correctly sets forth this fact:

For that same golden fleeey Ram, which bore
Phrixus and Helle from their stepdame's feares,
Hath now forgot where he was plast of yore,
And shouldered hath the Bull, which fayre Europa bore.

The constellation is not particularly brilliant, yet Aratus' description,

Faint and starless to behold
As stars by moonlight,
scarcely does it justice.

The Phenomena of Aratus. — The poem of Aratus, just quoted, is the earliest description of the starry heavens now extant. It is entitled *The Phenomena*, and was written in the third century B.C. So popular was it with the Greeks and afterwards with the Romans, that Landseer tells us "it became the polite amusement of the ladies to work the celestial forms in gold and silver on the most costly hangings." Even in more modern times this popularity does not seem to have waned, as shown by the fact that no less than one hundred and twenty editions in the various languages of Europe have appeared since the invention of printing. The chief value of the poem lies in the accurate knowledge it affords us of the early arrangement of the constellations, our present star maps being, indeed, to a large extent based upon it. Aratus has also for us an added interest as the poet whom Saint Paul quotes in his speech on Mars' Hill to the novelty loving Athenians, the line,

For we are also his offspring,
occurring in the opening dedication.

Mythology of Aries. — To return to our constellation, it represents in mythology the ram with the golden fleece of Argonautic fame, whose story briefly told is this. Phrixus and Helle were the children of Athamas, a legendary king of Thessaly, who afterward repudiated his first wife and married another. To enable the children to escape the displeasure of their stepmother, Mercury sent a ram, which took them on its back, vaulted into the air, and rushed off towards the east. In crossing the strait that divides Europe from Asia, Helle became frightened, lost her hold, and fell into the sea, which thereafter was known as the Hellespont. Continuing his flight, the ram bore the boy to Colchis, at the eastern end of the Euxine or Black sea. In return for his kind reception, Phrixus sacrificed the ram and gave its golden fleece to the king of the country, who hung it in the sacred grove of Ares under the guard of a sleepless dragon. As we shall see, several other constellations are associated with the further history of this remarkable fleece.

Hamal. — The chief star of Aries, marking his forehead, was called by the Arabs Hamal, a sheep. Among the Greeks in early times this star held the important office of sunrise herald at the vernal equinox.

TAURUS, THE BULL

Sweet Europa's mantle blew unclasp'd,
From off her shoulder backward borne :
From one hand droop'd a crocus ; one hand grasp'd
The mild bull's golden horn.

TENNYSON — *Palace of Art.*

TAURUS is one of the most notable of all the constellations, containing within its borders two celebrated groups of stars, the Hyades and the Pleiades. The Roman year prior to the time of Julius Cæsar began in March. At that season Taurus is just visible on the western horizon, setting after the sun ; hence Virgil's well-known description :

The white bull opens with his golden horns the year.

In legendary lore it was Europa's bull, Jupiter having assumed this disguise to bear the maiden away from her companions, with whom she was sporting on the shores of her native Phœnicia, to the island of Crete. On our star maps, following the ancient representation, only the front part of the animal is depicted. This, as usually explained, is because he

is swimming through the sea, and his flanks are immersed in the waves.

The Hyades. — The Hyades, which Aratus accurately describes as

Whitening all the bull's broad forehead,

form a most conspicuous and beautiful group. They were daughters of Atlas, and together with their half-sisters, the Pleiades, were called Atlantides. The appellation Hyades, supposed to be derived from the Greek word for rain, is usually attributed to their reputed influence on the weather. In the showery springtime they set just after the sun, and in the stormy period of late fall just before sunrise. Why the stars in these special positions should exercise more than ordinary control over terrestrial affairs would be difficult to explain; but the notion was extremely prevalent in ancient times that the heliacal rising or setting, as it was called, of the heavenly bodies had some peculiar influence; the heat of the dog days, for instance, being ascribed to the appearance of Sirius above the horizon just before sunrise. Whether or not the suggested derivation of the word be correct, however, moisture and storm were universally attributed to the

Hyades. The classic writers again and again refer to them as the rain stars ; Spenser called them “moist daughters,” and in Tennyson’s *Ulysses* we read :

Through scudding drifts the rainy Hyades
Vex’d the dim sea.

Aldebaran. — Aldebaran, the bright star in the Hyades group, signifies “hindmost.” The Arabians so named it because it follows or drives the Pleiades. Another popular title is “the Bull’s-eye,” from its position in the constellation. The slight tinge of red in the light of this star gives it an added beauty, and makes it one of the most conspicuous ornaments of our winter nights. Mrs. Sigourney in *The Stars* thus finely portrays it :

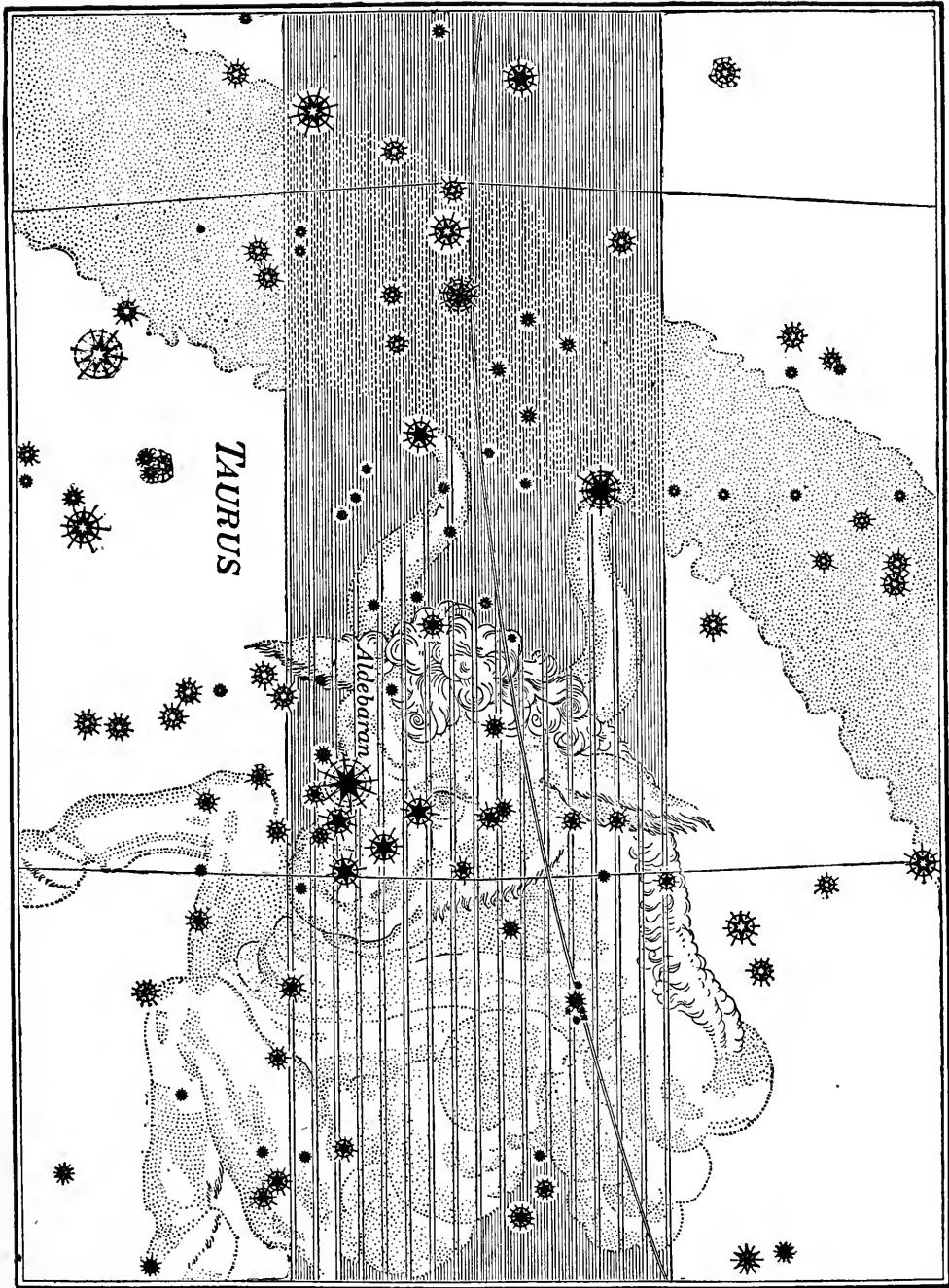
Go forth at night
And talk with Aldebaran, where he flames
In the cold forehead of the wintry sky.

The Pleiades. — The Pleiades lie upon the neck of the Bull, where they seem to cluster, as Bayard Taylor has it, like golden bees upon its mane, or, as Tennyson beautifully describes them, like fireflies in the evening’s dusk :

Many a night I saw the Pleiads, rising through the mellow shade,
Glitter like a swarm of fireflies tangled in a silver braid.

TAURUS

Aldebaran



With the Greeks these were the sailing stars, indicating by their heliacal rising the opening of navigation in May; and this has been the common derivation of the title Pleiades, from the Greek "to sail," but it seems more probable that it comes from another word signifying "many." Some of the classic poets made them a flock of pigeons flying from the celestial hunter Orion, and in popular folklore they have been widely known as the "hen and her chickens," Alcyone, the brightest star, being the "golden cluck-hen," though sometimes this star is a girl who is feeding the brood. A favorite eastern simile has been that of a necklace of brilliant gems, and it is even possible that this may have been the thought in the mind of the sacred writer in the Book of Job, for the passage has been translated, "Canst thou bind together the brilliant Pleiades?" If, on the other hand, we follow Milton,

the gray
Dawn and the Pleiades before him danced,
Shedding sweet influence,

then it is the gentle but potent power of advancing spring which this group by its heliacal rising heralds.

Not only to civilized peoples have these stars been objects of interest; "out of the dim reveries about

them of untutored races, issued their association with the seven beneficent sky spirits of the Vedas and the Zendavesta, and the location among them of the center of the universe and the abode of the Deity, of which the tradition is still preserved by the Berbers and Dyaks. With November, the Pleiad month, many primitive people began their year; and on the day of the midnight culmination of the Pleiades, November 17, no petition was presented in vain to the ancient kings of Persia; the same event gave the signal at Busiris for the commencement of the feast of Isis. . . . Savage Australian tribes to this day dance in honor of the 'Seven stars,' because 'they are very good to the black fellows.' " ¹

The Lost Pleiad. — The legend of the lost Pleiad has been well-nigh universal. Long ago Aratus wrote, "Seven stars they count, but only six appear." With poets it has been a favorite theme.

And is there glory from the heavens departed?
Oh! void unmarked! — Thy sisters of the sky
Still hold their place on high,
Though from its rank thine orb so long hath started,
Thou, that no more art seen of mortal eye.

MRS. HEMANS — *The Lost Pleiad.*

¹ Miss Clerke's *System of the Stars*, pp. 220-221.

But when we consider that under favorable circumstances as many as a dozen can be seen with the unaided vision, while optical assistance increases them to five or six hundred, and the photographic plate again multiplies this fivefold, we are forced to the conclusion that the number is simply a matter of eye and telescope.

As to which of the seven sisters disappeared, mythology is uncertain. According to one story it was Electra, who hid her face that she might not see the destruction of Troy, founded by her son Dardanus; but another account identifies her with Merope, who, having been deceived into marrying a mortal, felt so disgraced that she withdrew herself from the company of her sisters.

Alcyone.—Alcyone, the lucida of this group, is associated with the halcyon, the similarity of the words lending color to the idea that they had a common origin. Thompson, the English ornithologist, hazards the conjecture that the connection between them may be found in the fact that Alcyone culminates at nightfall about the time of the winter solstice, during the calm weather accompanying which season the king-fisher, our modern representative of the ancient

halcyon, was believed to nest. Milton in his *Hymn to the Nativity* connects this legend with the time of universal peace at the Saviour's birth:

But peaceful was the night
Wherein the Prince of light
 His reign of peace upon the earth began;
The winds with wonder whist
Smoothly the waters kist,
 Whispering new joys to the mild ocean,
Who now hath quite forgot to rave,
 While birds of calm sit brooding on the charméd wave.

The old myth is something like this. Halcyone, the daughter of Eolus the wind-god, was the devoted wife of Ceyx, king of Thessaly. Desiring to consult the oracle of Apollo, against the protestations of his wife, Ceyx embarked upon the winter sea and was shipwrecked and drowned. Halcyone, wandering disconsolately upon the shore, sees his body floating on the waves, and in her grief and despair rushes into the raging waters to cast herself upon the beloved form. Then behold, a miracle! They are both changed into halcyon birds and skim across the billows, which at once sink to rest, and calm succeeds the wild tempest.

Alcyone has of late years become more than ever an object of popular regard, from the brilliant speculations of Mädler, who surmised that it might be the central sun of the whole vast stellar universe. But though further investigations fail entirely to corroborate his views, still the star is one that may well enthrall the fancy. Lying sunk in space at a depth too great to fathom, and outshining our own sun a thousandfold, Archibald Lampman's magnificent description is hardly overdrawn:

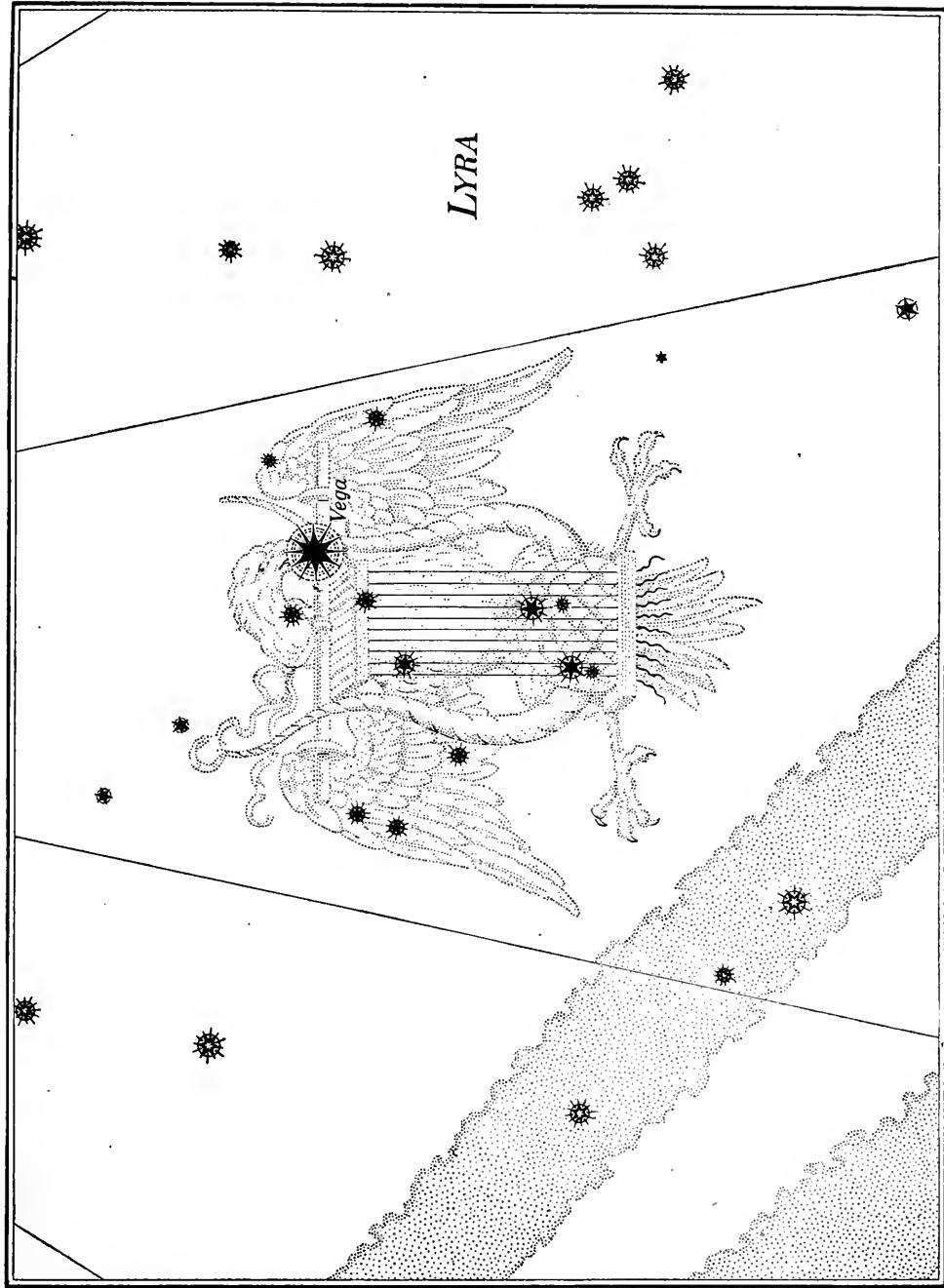
... the great and burning star,
Immeasurably old, immeasurably far,
Surging forth its silver flame
Through eternity !

Nebula of the Pleiades. — The investigations of the Pleiades by modern astronomy have led to many surprises. Most startling of all is the fact that the group combines the characteristics of a vast nebula with those of a cluster, thus indicating that these two classes of objects are not in reality as distinct as was formerly supposed. The magnificent photographs taken by the Henry Brothers at Paris show that the greater part of the constellation is enshrouded in nebulous matter. In the neighborhood of the principal stars it lies in heavy

masses, while elsewhere the sky background is scarcely stained by its delicate tracery. The condensation is greatest around Merope, thus giving plausibility to the conjecture that the light of this star may be variable.

This enfolding nebulosity, together with the common drift of the majority of the stars, renders it certain that the Pleiades constitute a connected system, the grandeur of which, however, exceeds our comprehension. A ray of light, which would take but a few hours to cross the solar system, could not under several years fly from boundary to boundary of this miniature universe of suns.

LYRA



GEMINI, THE TWINS

Mild Pollux, void of blame,
And steed-subduing Castor, heirs of fame.

SHELLEY — *Translation of Homer.*

CASTOR and Pollux, the twins, were the sons of Leda, and hence these stars are sometimes known as the Ledæan lights. Thus Owen Meredith in *The Wanderer*:

The lone Ledæan lights from yon enchanted air
Look down upon my spirit, like a spirit's eyes that love me ;
recalling Cowley's earlier lines :

How oft unwearied have we spent the nights,
Till the Ledæan stars, so famed for love,
Wonder'd at us from above.

Helen, of Trojan fame, was their sister. They accompanied the Argonautic expedition ; and when on the return voyage the vessel was almost overwhelmed in the storm, Orpheus with his lyre invoked Apollo, who caused two stars to appear on the heads of the twins, and the tempest was allayed. From this

circumstance Castor and Pollux became the tutelary deities of the seamen; and among the Romans it was very common to place their effigies upon the prows of vessels. It will be remembered that Saint Paul and his companions made the latter part of their voyage to Rome in a vessel whose sign was Castor and Pollux.

The lambent flames which sometimes in heavy weather play about the mastheads were regarded as typifying the twin gods. Thus Horace speaks of them as "Helen's brethren, starry lights"; but a single flame was thought to represent Helen herself, and was considered a threatening omen. In modern times these electrical displays, for such they are, go by the name of Saint Helen's or Saint Elmo's lights. The Padrone in Longfellow's *Golden Legend* tells the prince:

 Last night I saw Saint Elmo's stars,
 With their glittering lanterns all at play
 On the tops of the masts and the tips of the spars,
 And I knew we should have foul weather to-day.

Castor was a renowned horseman and Pollux a famous pugilist. Both were great warriors, and were frequently invoked in battle as well as in storm. Macaulay's description of how they turned the tide of conflict in the battle of Lake Regillus is familiar to all.

So spake he, and was buckling
Tighter black Auster's band,
When he was aware of a princely pair
That rode at his right hand.
So like were they, no mortal
Might one from other know:
White as snow their armor was;
Their steeds were white as snow.
Never on earthly anvil
Did such rare armor gleam;
And never did such gallant steeds
Drink of an earthly stream.

After the battle they bore the glad tidings to Rome
and were recognized by the high Pontiff.

The gods who live forever
Have fought for Rome to-day!
These be the great Twin Brethren
To whom the Dorians pray.
Back comes the chief in triumph,
Who in the hour of fight
Hath seen the great Twin Brethren
In harness on his right.
Safe comes the ship to haven
Through billows and through gales,
If once the great Twin Brethren
Sit shining on the sails.

Castor, albeit slightly inferior in luster, is much more interesting than his twin brother, being one of the most magnificent double stars which the telescope has revealed. The components, nearly equal in brightness, are circling about each other in orbits so extended and with motion so stately, that a single revolution will occupy nearly a thousand years.

CANCER, THE CRAB

I was born, sir, when the Crab was ascending, and my affairs go backward. — CONGREVE.

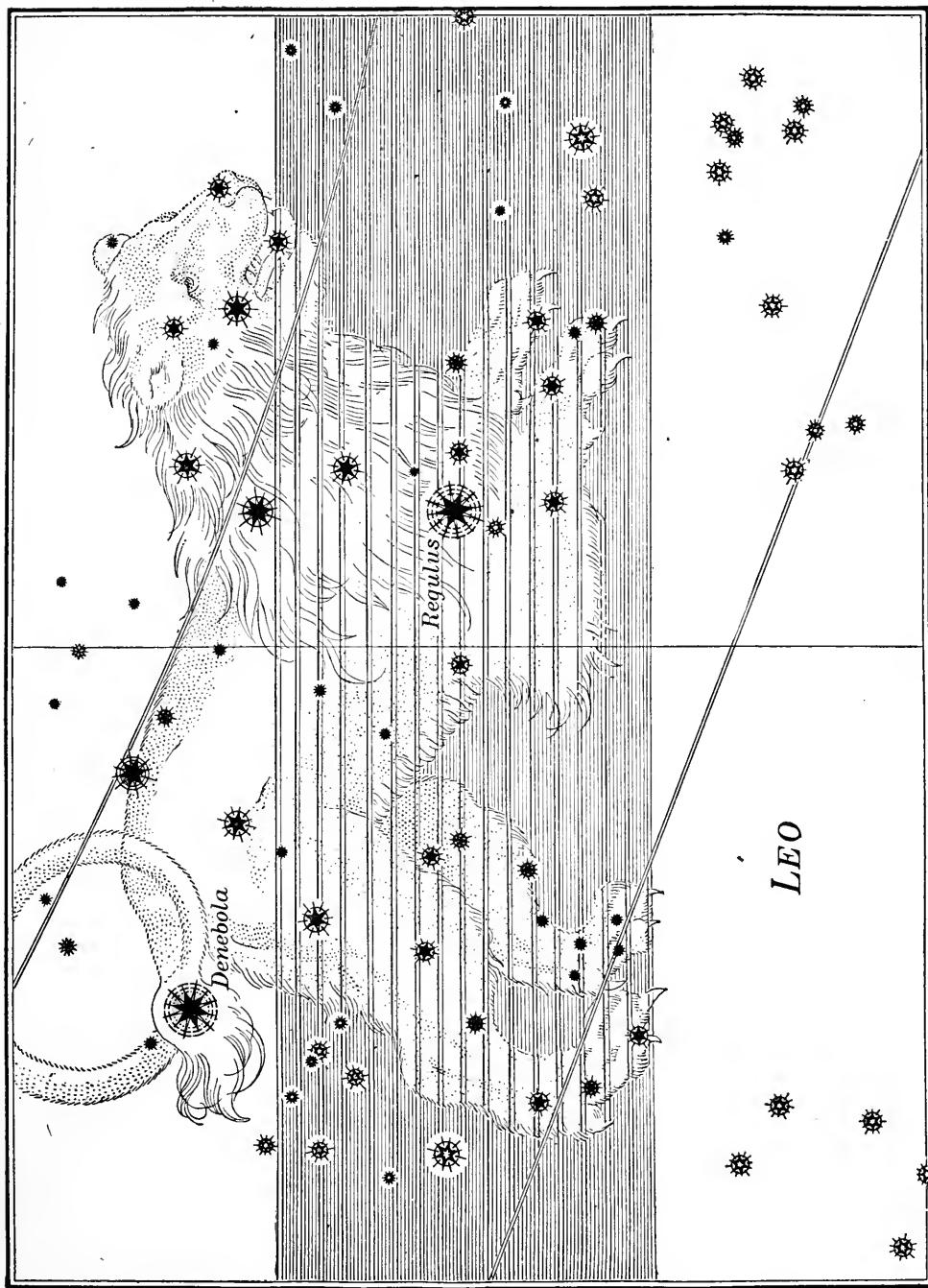
CANCER is the most inconspicuous of all the zodiacal constellations, yet none probably has been the subject of more attention. As the sign which marks the northern tropic, where the sun stops ascending and begins his retrograde movement, it is fittingly symbolized by the obliquely crawling crab. Here was located, according to the Chaldean and Platonic philosophy, "the gate of men," by which souls were supposed to descend into human bodies; Capricorn, the corresponding sign marking the southern tropic, being "the gate of the gods," through which the souls released at death returned to heaven.

slip
Mythology recounts that Juno sent this crab to annoy Hercules by pinching his toes, when he was contending with the many-headed hydra of the Lernæan swamp. Hercules having easily crushed the creature with a single blow, Juno, by way of reward, placed it in the sky.

This constellation contains the celebrated cluster Præsepe, or the Manger, the two stars lying one on either side being the asses. Since it is at best but a faint object, the slightest condensation of vapor in the atmosphere naturally hides it from view. Hence its dimness was regarded by the ancients as an infallible sign of coming storm. Aratus, who, besides his astronomical poem, wrote another on weather prognostics, gives the following rules:

A murky manger with both stars
Shining unaltered, is a sign of rain.
If while the northern ass is dimmed
By vaporous shroud, he of the south gleam radiant,
Expect a south wind: the vaporous shroud and radiance
Exchanging stars, harbinger Boreas.

Popularly this cluster is often called the beehive.



LEO, THE LION

The lion huge, whose tawny hide
And grinning jaws extended wide,
He o'er his shoulders threw.

WOODHULL — *Translation from Euripides.*

LEO represents the Nemæan lion, the fight with which formed the first of the celebrated labors of Hercules. It was also considered an emblem of heat, being the fiery trigon of the Arabs ; and throughout antiquity it has held a close relationship with the sun. To the Egyptians especially was it sacred, because the sun's entrance into the sign coincided with the Nile rise. The Sphinx, sculptured with the lion's body and virgin's head, is thought to have symbolized Leo and the neighboring Virgo, through which the sun passed during the continuance of the inundation.

The constellation is marked by the well-known sickle. Regulus in the end of the handle has ever been the “star royal,” its name being the diminutive of the Latin *rex*. Ptolemy seems first to have used this title, but far back in ancient Persia our star was the

leader of the four royal guardians of heaven, each ruling over a quarter of the sphere. Cor Leonis, the lion's heart, was another popular title of the star. The impression of greatness and power connected with it was universal, and was carried over into astrology, glory, riches, and might being the inheritance of all born under its potent influence.

Considerably to the eastward of the sickle is Denebola, marking the lion's tail. This star forms with Arcturus and Spica an equilateral triangle, and by taking in Cor Caroli on the north we have the so-called diamond of Virgo. The tracing of these large figures on the sky is a great help towards locating and remembering the different constellations.

VIRGO, THE VIRGIN

I am the Virgin, and my vestal flame
Burns less intensely than the Lion's rage;
Sheaves are my only garments, and I claim
A golden harvest as my heritage.

LONGFELLOW — *Poet's Calendar, August.*

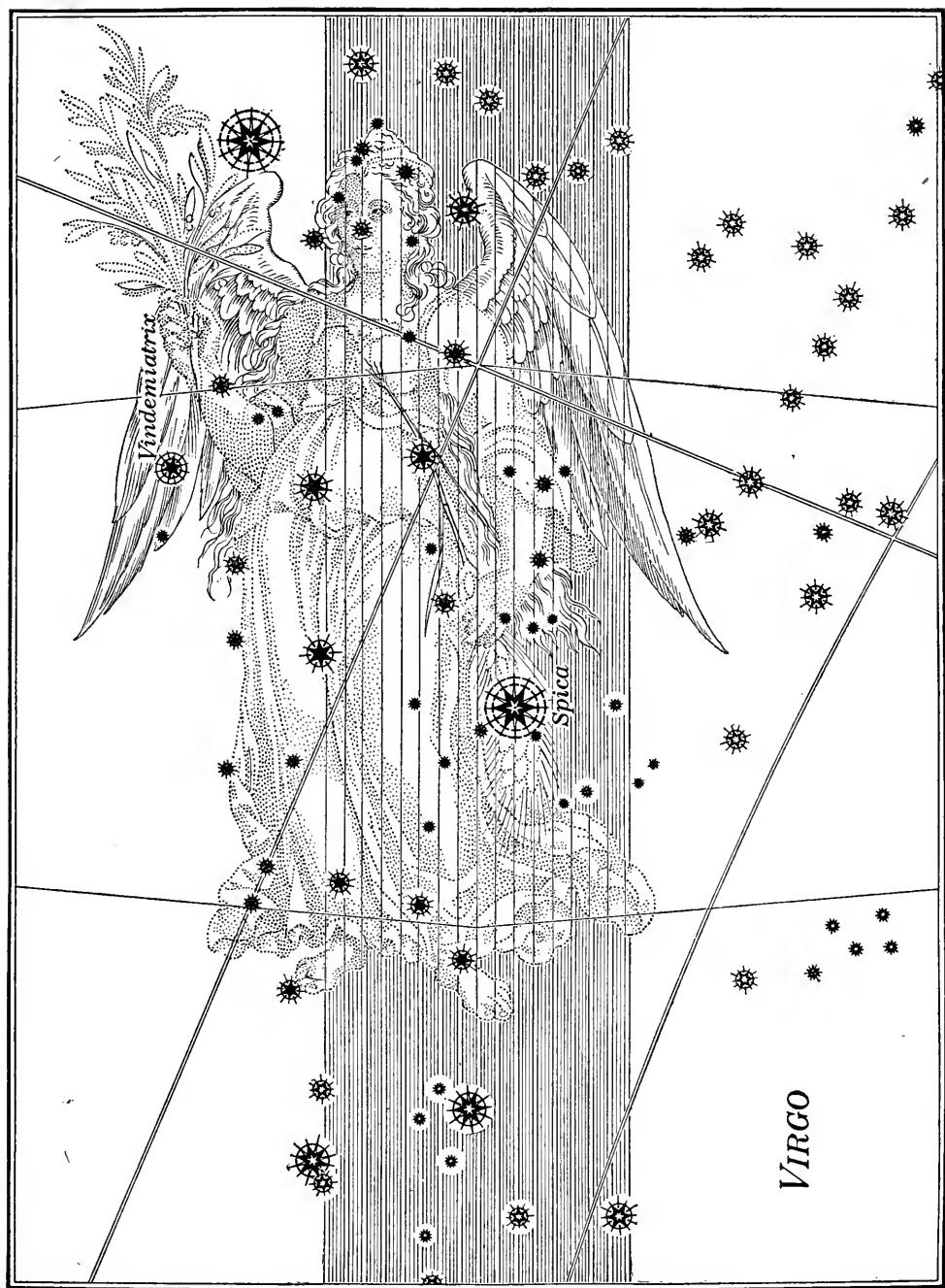
VIRGO has been universally the virgin, and generally the goddess of harvest holding a wheat-ear in her hand. In classic times she was interchangeably either Ceres or her daughter Proserpine. In the springtime Proserpine, playing among the flowers, is seized by Pluto and carried off to the lower regions to be his wife. Ceres, her mother, vainly seeks her up and down the earth. At length, having learned her sad fate from Arethusa, the nymph of the fountain, she beseeches Jupiter to intercede, and Proserpine is allowed to return at intervals, spending half her time with her mother, and the rest with her husband Pluto. There can be little doubt that this legend is allegorical, Proserpine representing the seed, which is buried in

the earth, but after a time comes forth to the light of day in a glad and bountiful harvest.

Aratus in his astronomical poem, however, makes this constellation Astræa the goddess of justice and purity. During the golden age of innocence and happiness she dwelt perpetually with men. When the world began to degenerate, and the silver age dawned, she took up her abode in heaven, but returned at eventide to visit those who yet cared for her. But at last came the brazen age with war and violence ; and then this fair goddess hid her face from men and left the world to famine, pestilence, and misery.

The bright star Spica indicates the wheat-ear which Virgo holds in her left hand. By the Arabs it was called the solitary or defenseless one, a title which refers, doubtless, to its lone position on the sky, there being no other conspicuous star near it. Vindemiatrix, lying some distance to the north, though now but a third magnitude star, would seem from the great attention paid to it to have been brighter in past ages. The name means “grape gatherer,” and its heliacal rising was formerly the herald of the vintage time.

Virgo is the largest of all the zodiacal constellations. This region of the sky, while comparatively starless, is



especially remarkable for the extraordinary number of nebulae that here congregate. No other equal area of the heavens is nearly so rich in these mysterious objects. Sir John Herschel first called attention to the significant fact that the gaseous nebulae seem to crowd towards those portions of the sky most remote from the Milky Way. This mass, gathered together in Virgo and Coma Berenices, he likens to "a canopy which, taking the circle of the Milky Way as a horizon, occupies the zenith and descends thence to a considerable distance on all sides."

LIBRA, THE SCALES

I bear the scales, when hang in equipoise
The night and day.

LONGFELLOW — *Poet's Calendar, September.*

LIBRA in classic days marked the autumnal equinox, though now, owing to precession, Virgo occupies that position. In all the round of the zodiac this constellation alone represents an inanimate object; and its antiquity, though somewhat in dispute, does not seem to be very great. Certain it is that the Greeks associated its stars with the claws of the Scorpion which follows to the east. Scorpio, indeed, seems to have been considered a double sign, thus completing the twelve.

Among the Romans, however, we find the title Libra commonly employed. Virgil, in his first Georgic, flatters Augustus by representing the Scorpion as contracting his claws to make room for the soul of the emperor to rest after death in his natal sign, the sun having occupied this position at his birth. The scales

might, in this connection, be regarded as the appropriate insignia for the dispenser of justice to the world. Milton suggests another origin :

The Eternal, to prevent such horrid fray,
Hung forth in heaven his golden scales, yet seen
Betwixt Astræa and the Scorpion sign;

Astræa being, as we have seen, one of the designations of Virgo. The constellation is comparatively faint, but may be readily located from its position with reference to Scorpio.

SCORPIO, THE SCORPION

Though on the frigid scorpion I ride,
The dreamy air is full, and overflows
With tender memories of the summer-tide
And mingled voices of the doves and crows.

LONGFELLOW — *Poet's Calendar, October.*

SCORPIO was the mythological monster which caused the disastrous runaway of the steeds of Phœbus Apollo. Phaëthon, it would seem, desiring to prove his sonship, demanded of his father that he be allowed to drive for one day the chariot of the sun. After vainly expostulating, Phœbus granted his request and the horses were harnessed. Up the steep way they mount, and finding inexperienced hands upon the reins, the steeds dash off from the traveled road and rush headlong through the constellations. But when they come to where the Scorpion stretches out its long arms shod with huge and threatening claws, and its immense tail ending in a horrid sting, then Phaëthon, pale with terror, loses all control and throws down the reins; while the horses plunge wildly, hurling the chariot over trackless

wastes, now up in high heaven until the gods are scorched with the heat, and now down close to the world until the clouds go up in vapor and the mountains begin to smoke. At length Jupiter, aroused to action by the imminent peril, launches a thunderbolt which hurls the ambitious youth from his chariot and plunges him into the great sky-river Eridanus.

Scorpio cannot well be mistaken because of the fiery Antares which marks the creature's heart. Its title signifies in the Greek "the rival of Mars," this being, in fact, the only star in all the sky that could be mistaken for the red god of war.

Antares is interesting telescopically, not only for its red color, but more especially on account of the small green companion which lies so close as to be involved in the flaming rays of the larger star. Not far to the northwest of this fine double is a comet-like cluster, which Herschel describes as "the richest and most condensed mass of stars in the firmament." Renewed interest in it was excited by the blazing out in 1860 of a new star right in the center of the group. The appearance, to use Miss Clerke's striking simile, was that of a triton invading a shoal of minnows.

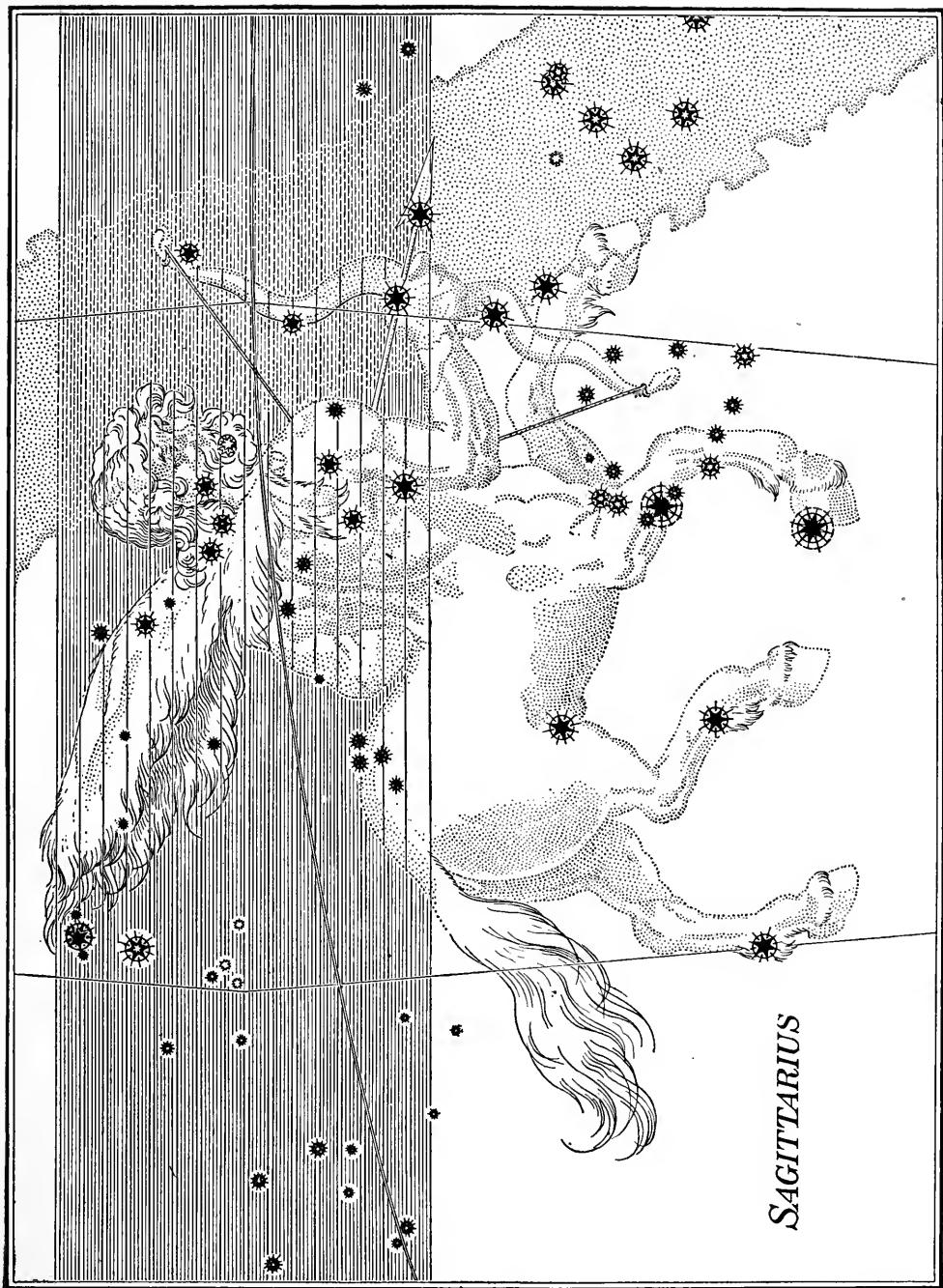
SAGITTARIUS, THE ARCHER

The centaur, Sagittarius, am I,
Born of Ixion and the cloud's embrace :
With sounding hoofs across the earth I fly,
A steed Thessalian with a human face.

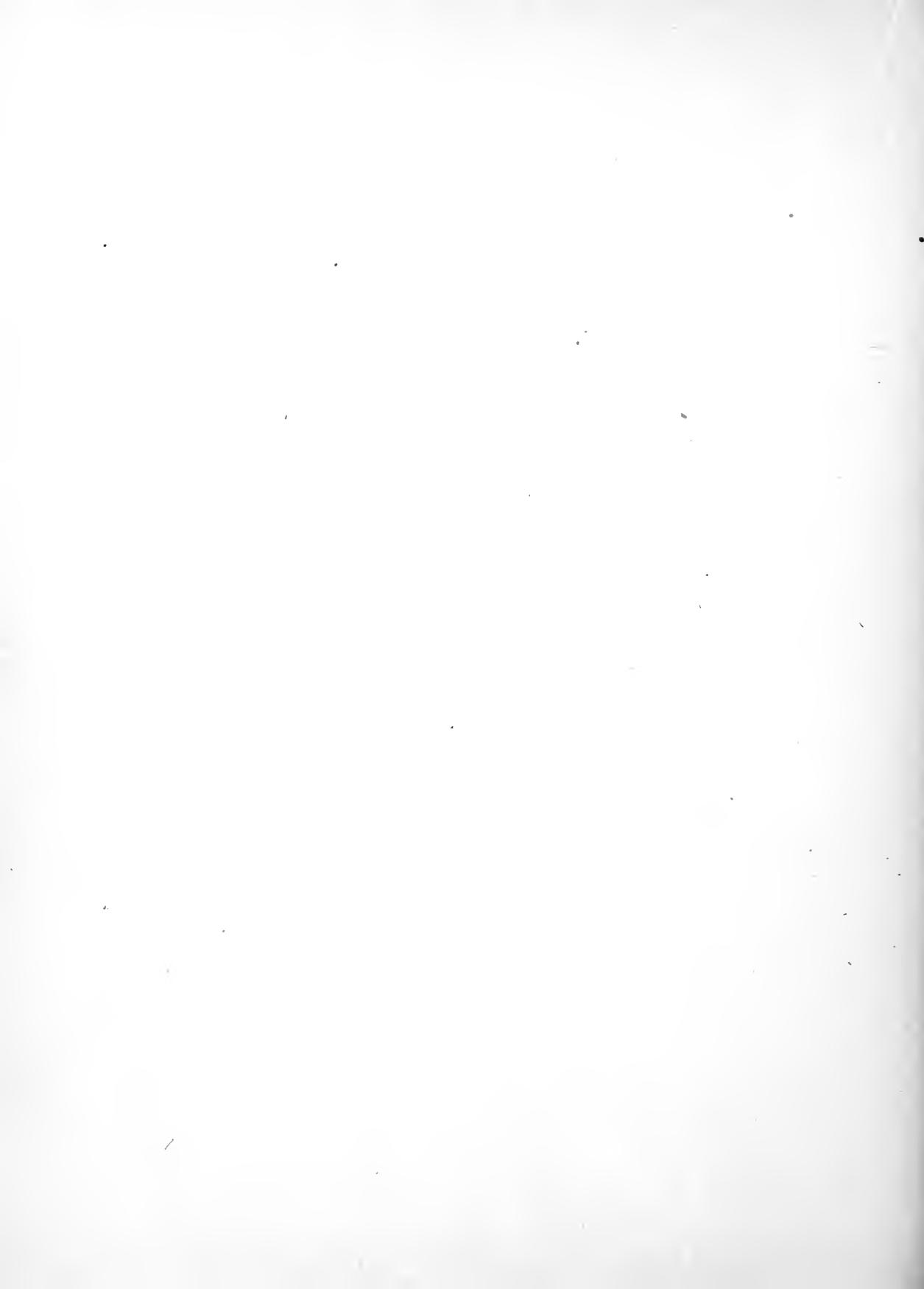
LONGFELLOW — *Poet's Calendar, November.*

SAGITTARIUS is the patron of the hunter and the chase. In the time of Eratosthenes it was figured as a satyr, but afterwards was changed to a centaur, not, however, to be confounded with the larger Centaurus far to the south. These centaurs, or bull-killers, as the word signifies, were an ancient race inhabiting Mount Pelion in Thessaly. Homer called them savage beasts, but in later times they were represented as half man and half horse. The Thessalians being famous riders, and hunting the bull on horseback, a national sport, we can readily understand how the fable arose.

Forming the western portion of this constellation is the familiar milk dipper. According to Allen it is extremely ancient, having been “an object of worship in China for a thousand years before our era.”



SAGITTARIUS



CAPRICORNUS, THE GOAT

Then grievous blasts
Break southward on the sea, when coincide
The Goat and sun, and then a heaven-sent cold.

ARATUS.

CAPRICORNUS marked in classic times the winter solstice. It occupied, therefore, the most southern or lowest part of the zodiac. Milton's lines allude to this:

Some say the sun
Was bid turn reins from the equinoctial road
• • • • •
Up to the tropic Crab; thence down amain,
By Leo and the Virgin and the Scales,
As deep as Capricorn, to bring in change
Of seasons to each clime.

One ancient writer suggests that, as the sun here begins his ascent in the heavens, the goat is a fitting symbol from its propensity to scale the inaccessible mountain sides. As usually depicted, however, Capricornus is a sea-goat, having the head and body of a goat, but the tail of a fish. It is thus represented on our modern star maps.

Naturally we find this constellation associated with the god Pan, who was also part goat. The legend goes that when the gods were driven from Olympus by the giants and took refuge in Egypt, disguising themselves variously as animals, Pan took the form of a goat. When Typhon, the fire-breathing monster, suddenly attacked him, he leaped in a fright into the Nile and became amphibious.

Capricornus contains one of the few notable naked-eye doubles. This is the principal star lying at the base of the horns. Its duplicity is now obvious to the most casual observer, but two thousand years ago it would have required a sharp eye to distinguish the components. They are separating at the rate of one minute of arc in about thirteen hundred years, their present distance being six minutes.

AQUARIUS, THE WATER-BEARER

The sun his locks beneath Aquarius tempers,
And now the nights draw near to half the day.

LONGFELLOW — *Translation of Dante.*

AQUARIUS is the almost universal designation of the next zodiacal constellation. Its watery character has been attributed to the fact that the sun passes through it during the rainy season. Many of the constellations in this neighborhood, in fact, are aquatic, there being, besides Capricornus and Aquarius, the Dolphin, three fishes, and Cetus, the Whale ; so that naturally enough we find this part of the sky designated by the Chaldeans as the sea.

The river Eridanus also is sometimes shown as having its source in the Waterman's bucket,—a most unaccountable circumstance, unless, like the widow's barrel of meal and cruse of oil in the days of Elijah, it never runs dry. Manilius did indeed assert as much in describing the constellation ; for he says, “ And so the urn flows on,” an expression which became proverbial for a ceaseless babble of tongues.

PISCES, THE FISHES

Sunset and evening star.

TENNYSON—*Crossing the Bar.*

THE zodiacal constellation Pisces consists of two fishes, quite widely separated, but having their tails connected by a ribbon. There is, besides, another south of Aquarius distinguished as the Southern Fish, and marked by the bright star Fomalhaut.

WMS
The two finny inhabitants of the zodiac are comparatively starless, and of little interest aside from their mythological connection with Aphrodite or Venus. That goddess, frightened by the giant Typhon, threw herself with the infant Cupid into the Euphrates. One account says that the fishes bore them away to safety, but the Greek legend changed them into fishes which were afterward exalted to the sky. Hence this constellation was popularly known as “Venus and Cupid.” A few words, then, concerning the brightest and most beautiful of all the starry host may here be appropriately added.

Venus.—The coy character of the goddess who was fabled to have sprung from the sea foam is fittingly

symbolized by her representative in the sky. Now bursting out in a blaze of beauty that dazzles the admiring world, now swiftly retreating and vanishing in the sunset's glare, then shyly peeping forth in the east before the world wakes, she is as fickle and inconstant as the most incorrigible flirt that ever queened it over her unfortunate lovers. Yet even this capricious beauty owns allegiance to her lord the sun, and held by indissoluble bonds, continually follows and attends upon his glorious majesty.

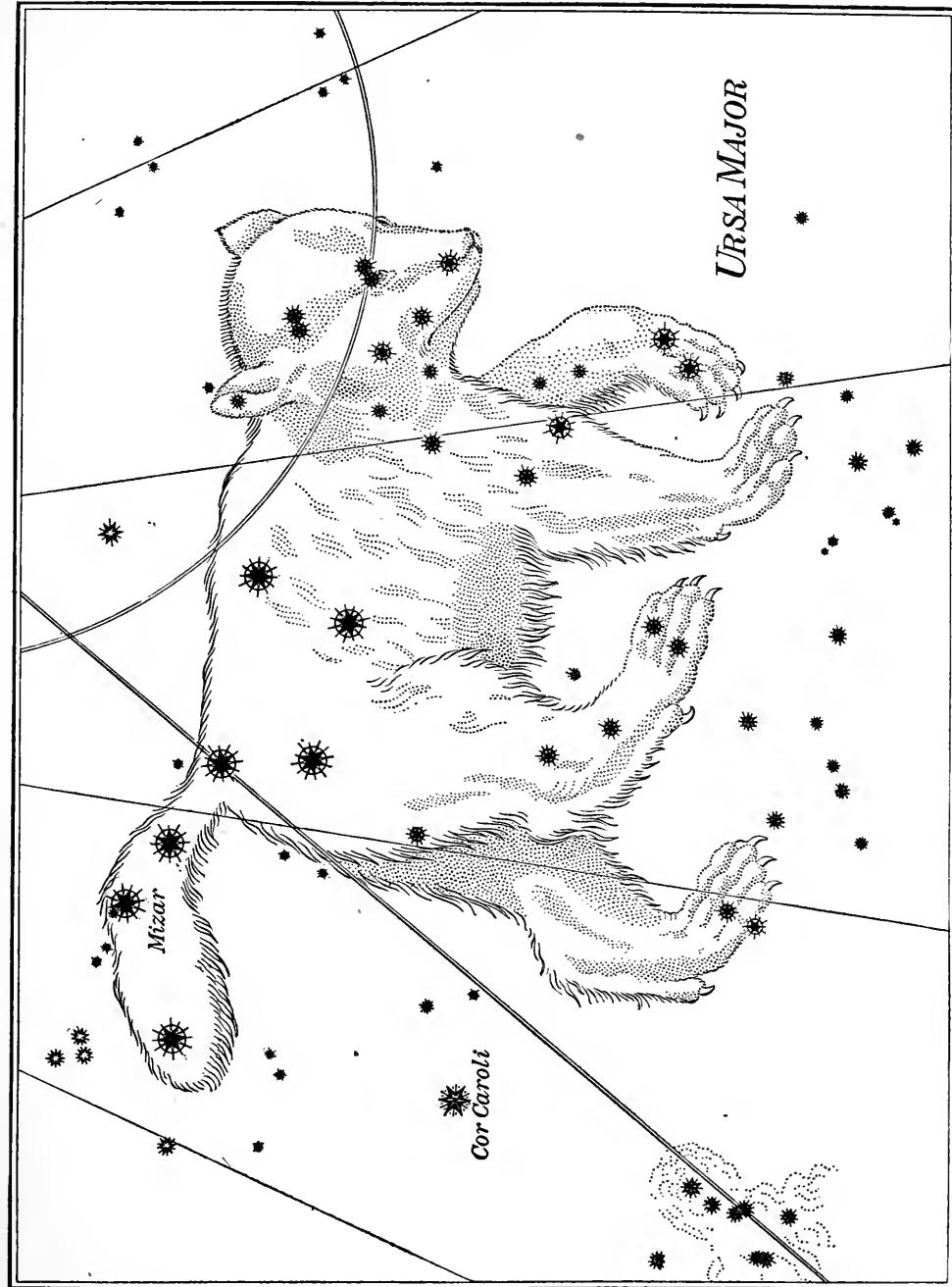
Although the title is sometimes given to other planets, Venus is preëminently the evening and the morning star. Its identity in the two positions must certainly have been known from early ages, yet it was frequently designated by different names when respectively east and west of the sun. Thus the Greeks called it Hesperus as evening star and Phosphorus as morning star. These names will recall Tennyson's lines in his *In Memoriam*:

Sad Hesper o'er the buried sun,
And ready, thou, to die with him;
Thou watchest all things ever dim
And dimmer, and a glory done.

Bright Phosphor, fresher for the night,
By thee the world's great work is heard
Beginning, and the wakeful bird;
Behind thee comes the greater light.

•
Sweet Hesper-Phosphor, double name
For what is one, the first, the last,
Thou, like my present and my past,
Thy place is changed, thou art the same.

URSA MAJOR



URSA MAJOR, THE GREAT BEAR

One after one the stars have risen and set,
Sparkling upon the hoar-frost of my chain;
The Bear that prowled all night about the fold
Of the North-star hath shrunk into his den,
Scared by the blithesome footsteps of the Dawn.

LOWELL — *Prometheus*.

THIS constellation, though in no way resembling that animal, has in all ages and among nearly all peoples been the Bear. Homer speaks of it as keeping a watch upon Orion from its arctic den, and references to it abound alike in classic and modern literature.

Mythology. — Mythology recognized in this star group the beautiful Callisto, who, having unfortunately excited the jealousy of Juno, was changed by the angry goddess into a bear. Wandering in this sad plight through the woods, she met her own son Arcas, and was about to embrace him, when he in alarm raised his hunting spear to strike her. Jupiter, however, took pity on them, and prevented the crime by snatching both up to the sky, where they became the Great and the

Little Bears. Juno, still further enraged at the honor thus done them, instigated Oceanus and Tethys to forbid the creatures' approach to their watery domain. In virtue of this prohibition they wander round and round the pole but never venture to dip their huge bodies beneath the horizon. As Bryant well expresses it,

The Bear, that sees star setting after star
In the blue brine, descends not to the deep.

As we approach the equator, of course, this condition no longer holds, and the constellations which are circumpolar in our latitude begin to rise and set. Thus Camoens, the Portuguese poet, wrote:

We saw the Bears, despite of Juno, lave
Their tardy bodies in the boreal wave.

Reference in Job. — That it is this group of stars, and not Arcturus, the leading brilliant in Boötes, which is referred to in Job's question, "Canst thou guide Arcturus with his sons?" seems tolerably certain. Indeed, the passage as translated in the revised version reads, "Canst thou guide the Bear with her train?" This figuring of the stars as a she-bear attended by her young avoids the sadly unnatural representation of our

modern maps which furnish a comparatively tailless animal with a most notable caudal appendage.

Indian Legend. — Our North American Indians saw here also a bear, but the stars of the tail were for them the hunter and his dogs. Mr. Allen tells us that “ the Housatonic Indians, who roamed over that valley from Pittsfield through Lenox and Stockbridge to Great Barrington, had a story that the chase of the stellar bear lasted from spring till the autumn, when the animal was wounded and its blood plainly seen on the crimson foliage of the forest.”

Other Names. — While, as we have seen, the more formal title of this constellation has almost universally been the Bear, yet various other appellations, based on real or fancied resemblances, have also been very widely prevalent. Homer, for instance, refers to “ the Bear, which oft the Wain they call,” showing that even at that early period the popular imagination had found in its seven stars the likeness to some huge celestial cart lumbering nightly about the pole. Among the Romans it was frequently the Plow, usually drawn by three oxen represented by the stars in the tail; but Cicero speaks of Septem- or Septentriones, the Seven Plow-oxen. We thus have two terms derived from this

constellation denoting the frigid characteristics of the northern regions,—*arctic*, from the Greek word for bear; and *septentrion*, from the plow-oxen.

The Plow is still a common title in England, but hardly so popular as the older Homeric appellation, the Wain. In early English days it seems to have been Arthur's Wain; and Smyth, deriving the name from the Welsh *Arth*, a bear, finds in the circling of this constellation about the pole the possible origin of King Arthur's famous Round Table. Afterwards it became Charles' Wain, originally perhaps in honor of Charlemagne (Charles the Great), though later, of course, associated with the English kings of the same name.

Use as a Timepiece.—From the circumstance that to northern peoples these stars are visible throughout the year, they have naturally served the rustic population as timepieces, indicating the progress of the night by their slow revolving motion. Shakespeare in *King Henry IV* makes the carrier in the Rochester Inn yard exclaim, “Heigh-ho! An’t be not four by the day, I’ll be hanged: Charles’ Wain is over the new chimney, and yet our horse not packed.” Spenser in the *Faërie Queene* has a similar allusion:

By this the northern wagoner had set
His sevenfold teme behind the steadfast starre;

and likewise Tennyson in his well-known *New Year's Eve*:

We danced about the may-pole and in the hazel copse,
Till Charles' Wain came out above the tall white chimney-tops.

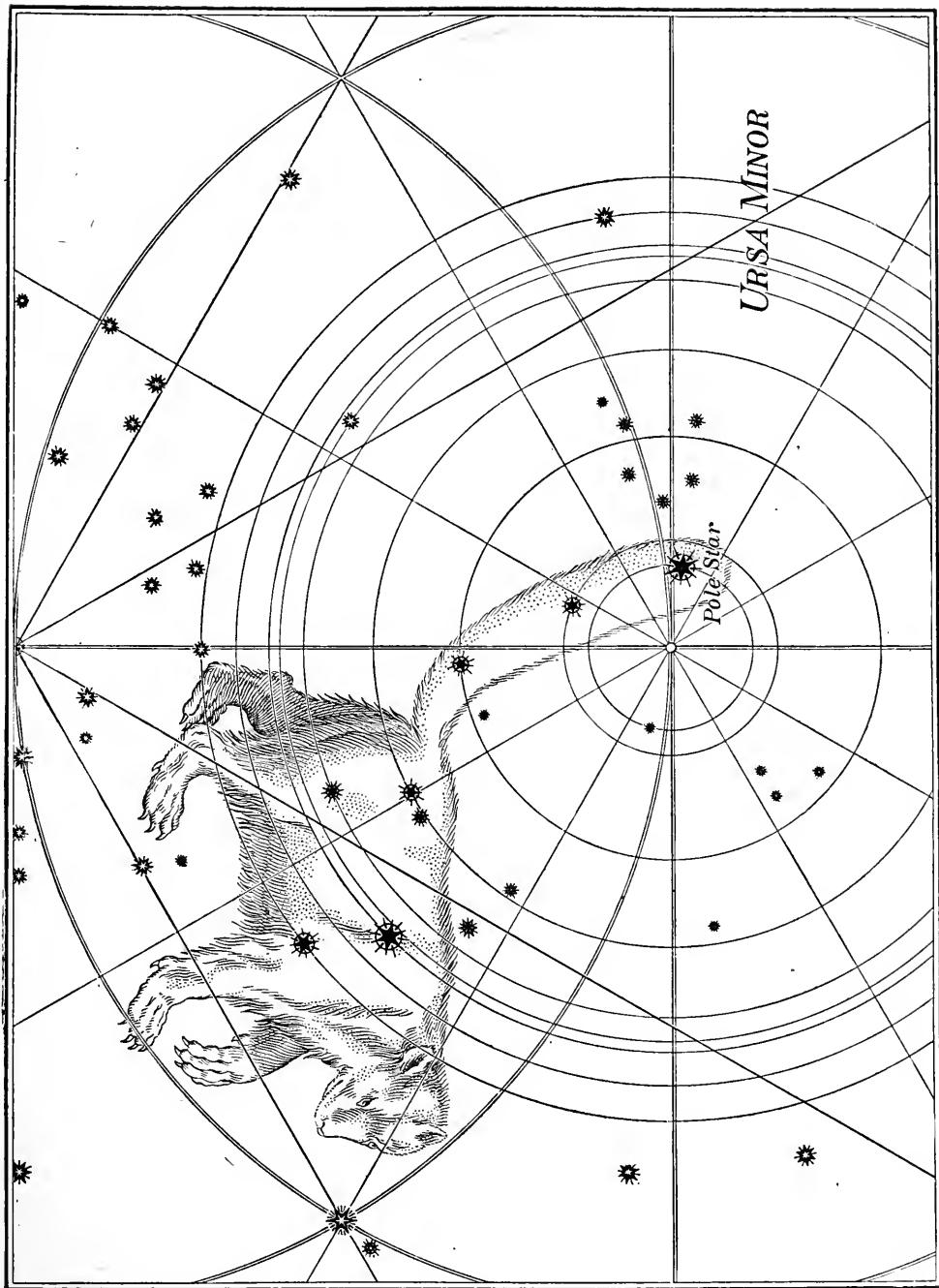
I need hardly refer to the extremely popular modern name of this group, the Great Dipper. In springtime it runs high up overhead in the evening, and appears upside down; while in the fall and early winter it seems to be resting upon the horizon in an upright position. Perhaps B. F. Taylor had this in mind when he wrote in his *World on Wheels*:

From that celestial dipper,—or so I thought,—the dews were poured out gently upon the summer world.

The middle star in the handle of this dipper is the well-known naked-eye double formed by Mizar and Alcor. They are popularly called “the horse and his rider,” or “Jack on the middle horse,” referring to the idea of the three horses dragging the wain or plow. A similar conceit prevails in Germany, where Alcor represents Hans the wagoner, who, as a reward for assisting the Saviour when weary, was offered the kingdom of

heaven; but modestly deeming himself unsuited to enjoy such a royal gift, he besought that instead he be permitted to drive this celestial team, and may accordingly be seen mounted upon the highest horse.

In Italy also Alcor was known as the Little Starry Horseman; but the Greeks identified it as the lost Pleiad Electra, who had wandered away from her companions and been changed into a fox.





URSA MINOR, THE LITTLE BEAR

Visit us

With thy long leveled rule of streaming light,
And thou shalt be our star of Arcady,
Or Tyrian Cynosure.

MILTON — *Comus.*

Cynosure. — The Little Bear is less ancient in its constellated form than the Great Bear. It seems to have originated with the Phœnicians, who were great seafaring people, and naturally made use of this group, which for several millenniums has occupied the immediate region of the celestial pole. It was, however, early adopted by the Greeks, by whom it was designated Cynosure or Dog's Tail. Great difficulty has been experienced in trying to account for this title, since the dog is not usually mentioned in connection with the legend of Callisto and Arcas. Some authorities have attempted to trace the word to a much earlier source in the Euphrates valley.

However this may be, the appellation, which in modern times is generally restricted to the pole-star alone, has always been very popular, and even appeared

in scientific treatises of two and three centuries ago. It has also sometimes been called the Little Wain or Chariot ; thus Tennyson in *In Memoriam* says :

The lesser wain
Is twisting round the polar star.

Tramontana, Mountain of the North. — Another name, *Tramontana* or *Transmontane*, that is, above or beyond the mountain, given in medieval times indiscriminately to the constellation and its principal star, suggests a most curious and persistent legend respecting the “mountain of the north.” Professor Sayce finds traces of this in the early Sumerian days, when “the heaven was believed to rest on the peak of ‘the mountain of the world’ in the far northeast, where the gods had their habitations.” In classic times the Hyperboreans were thought to dwell beyond its lofty peak in a clime of perpetual spring, as Moore sings :

I come from a land in the sun-bright deep,
Where golden gardens glow,
Where the winds of the north, becalmed in sleep,
Their conch shells never blow.

The sacred writers were evidently familiar with the story of this fabulous mountain. Isaiah writes of it :

“How art thou fallen from heaven, O Lucifer ! For thou hast said in thine heart, I will ascend into heaven ; I will exalt my throne above the stars of God ; I will sit also upon *the mount of the congregation in the sides of the north.*” And the Psalmist likens Mount Zion to it : “Beautiful for situation, the joy of the whole earth, is *Mount Zion, in the sides of the north,* the city of the great King.”

The Hindus called it Mount Meru, “the seat of the gods” ; and in Norse mythology we find the same “Hill of heaven.” Its existence seems to have been believed in as late as the seventeenth century, for in Chilmead’s work we read of “the mountaine Slotus, which lies under the pole, and is the highest in the world.” Poe also in *Ulalume* fancifully refers to “Mount Yaanek, in the realms of the boreal pole.”

The Pole-Star. — The pole-star, forming the point around which this constellation swings, is naturally from its apparent fixity the most familiar and oft-mentioned of all the stars. Christina Rossetti sings of it :

One unchangeable upon a throne
Broods o’er the frozen heart of earth alone.

Shakespeare in *Julius Cæsar* makes him say :

But I am constant as the northern star,
Of whose true-fixed and resting quality
There is no fellow in the firmament.
The skies are painted with unnumbered sparks ;
They are all fire, and every one doth shine :
But there's but one in all doth hold his place.

Bryant in his fine *Hymn to the North Star* thus apostrophizes it :

The sad and solemn night
Hath yet her multitude of cheerful fires ;
The glorious host of light
Walk the dark hemisphere till she retires ;
All through her silent watches, gliding slow,
Her constellations come, and climb the heavens, and go.
And thou dost see them rise,
Star of the Pole ! And thou dost see them set.
Alone in thy cold skies,
Thou keep'st thy old unmoving station yet,
Nor join'st the dances of that glittering train,
Nor dipp'st thy virgin orb in the blue western main.

It has been for many centuries, and will be for as many more to come, preëminently the *Stella Maris*, the seaman's star. Dryden wrote of the infancy of navigation :

Rude as their ships were navigated then,
No useful compass or meridian known ;
Coasting, they kept the land within their ken,
And knew no north but when the Pole-star shone.

Moore also in *Lalla Rookh* sings of Nourmahal :

Thou loveliest, dearest of them all,
The one whose smile shone out alone,
Amidst a world the only one !
Whose light, among so many lights,
Was like that star, on starry nights,
The seaman singles from the sky
To steer his bark forever by.

So it came to be called the lode-star, leading or guiding the mariner ; and to quote once more Bryant's *Hymn* :

A beauteous type of that unchanging good,
That bright eternal beacon, by whose ray
The voyager of time should shape his heedful way.

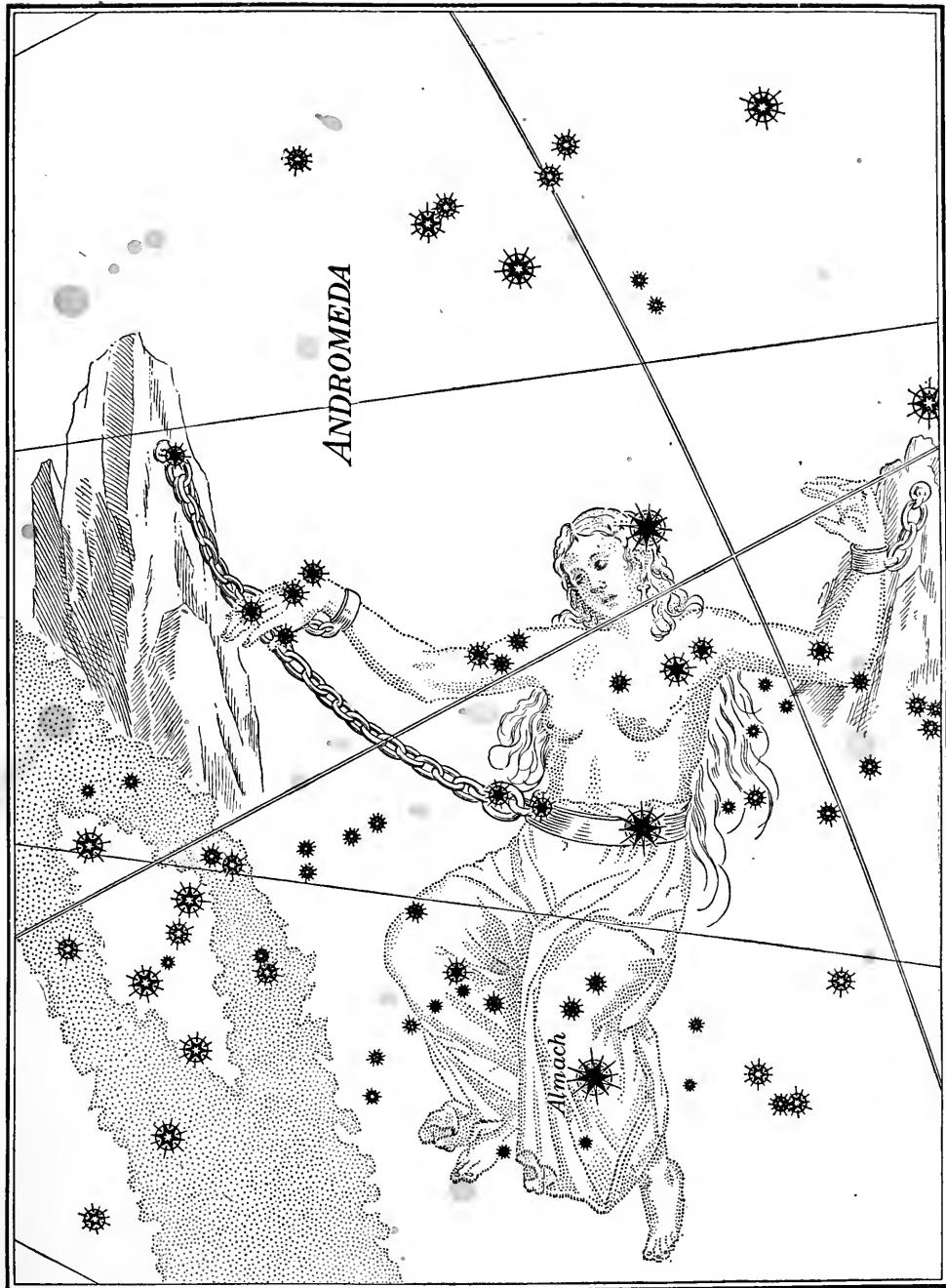
CEPHEUS AND CASSIOPEIA

Or that starred Ethiop queen that strove
To set her beauty's praise above
The sea-nymphs, and their powers offended.

MILTON—*Il Penseroso*.

CEPHEUS was king of Ethiopia, and Cassiopeia his beautiful queen. But so inordinate was her vanity that she dared compare herself with the sea-nymphs, who were greatly enraged and sent a frightful monster to ravage the coast of the kingdom. On appealing to the oracle, the unhappy pair were told that the only way to avert the disaster would be to chain their daughter Andromeda to a rock and allow the leviathan to devour her. How she was rescued by the gallant Perseus will appear later.

Cepheus and his queen are side by side upon the starry sphere, opposite the Great Bear. Cepheus is an inconspicuous constellation, but Cassiopeia is marked by the well-known celestial W. The rude resemblance to an armed chair may also be made out, and this in fact has from classic days been the common mode of depicting





the group, the queen having been further condemned, after the rescue of her daughter, to be bound to this chair and swung round and round the pole, in order that her lesson in humility might be complete.

Tycho Brahe's New Star.—It was in Cassiopeia that the great new star flamed out in November, 1572, speedily outshining Venus and becoming conspicuous in full daylight, then gradually fading, till after the lapse of sixteen months it totally vanished. The telescope, however, shows in the same spot a faint reddish star, which from its nebulous appearance and unsteady light is generally regarded by astronomers as the smouldering embers of the once unrivaled orb. This brief apparition caused great alarm throughout Europe, many considering it a portent of the end of the world. Even the great Beza, falling in with the superstitions of his age, attempted to prove that it was the same star which had conducted the wise men of the East to Bethlehem when Christ was born, and that its mission now was to proclaim his second coming.

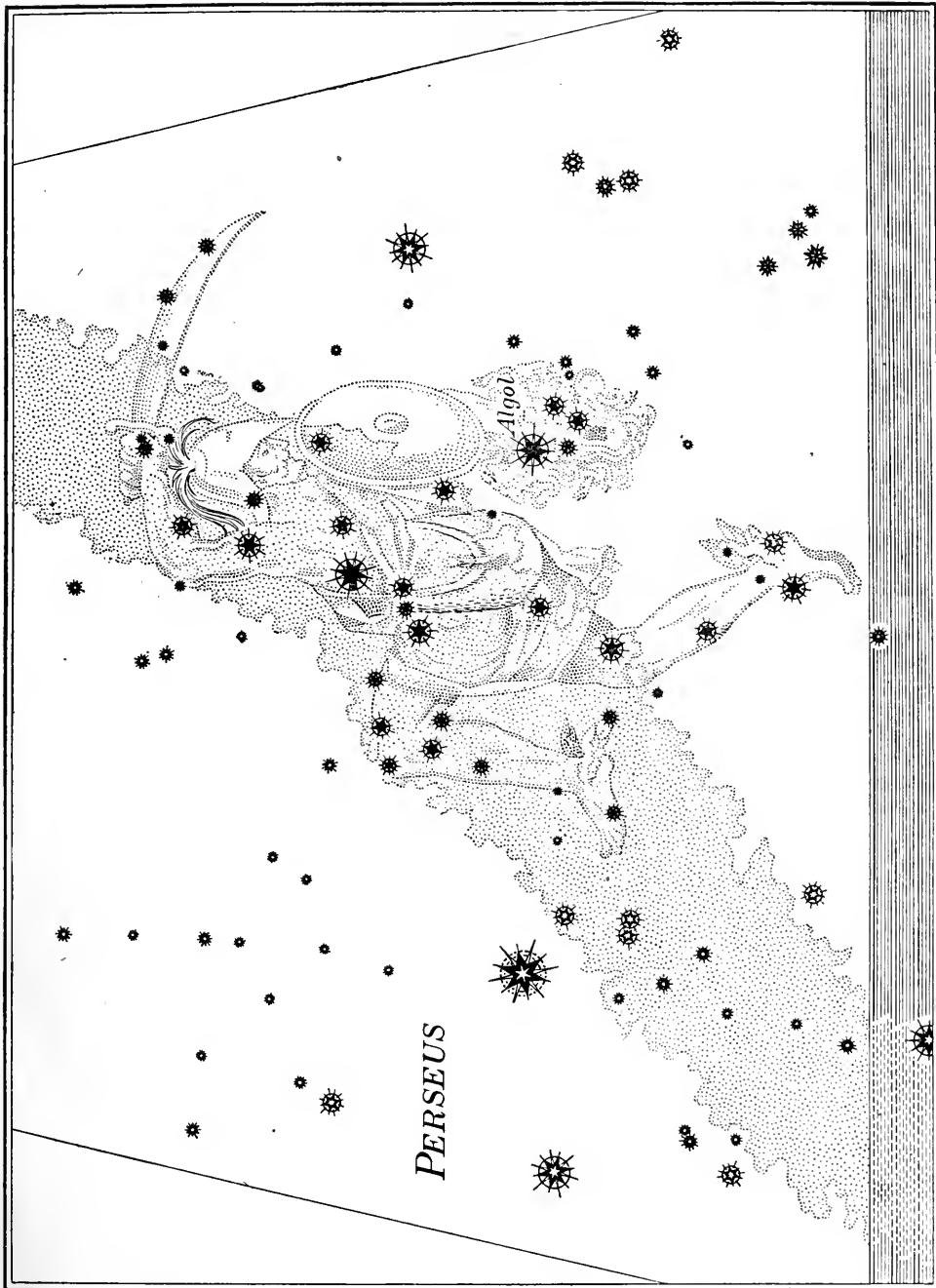
PERSEUS AND ANDROMEDA

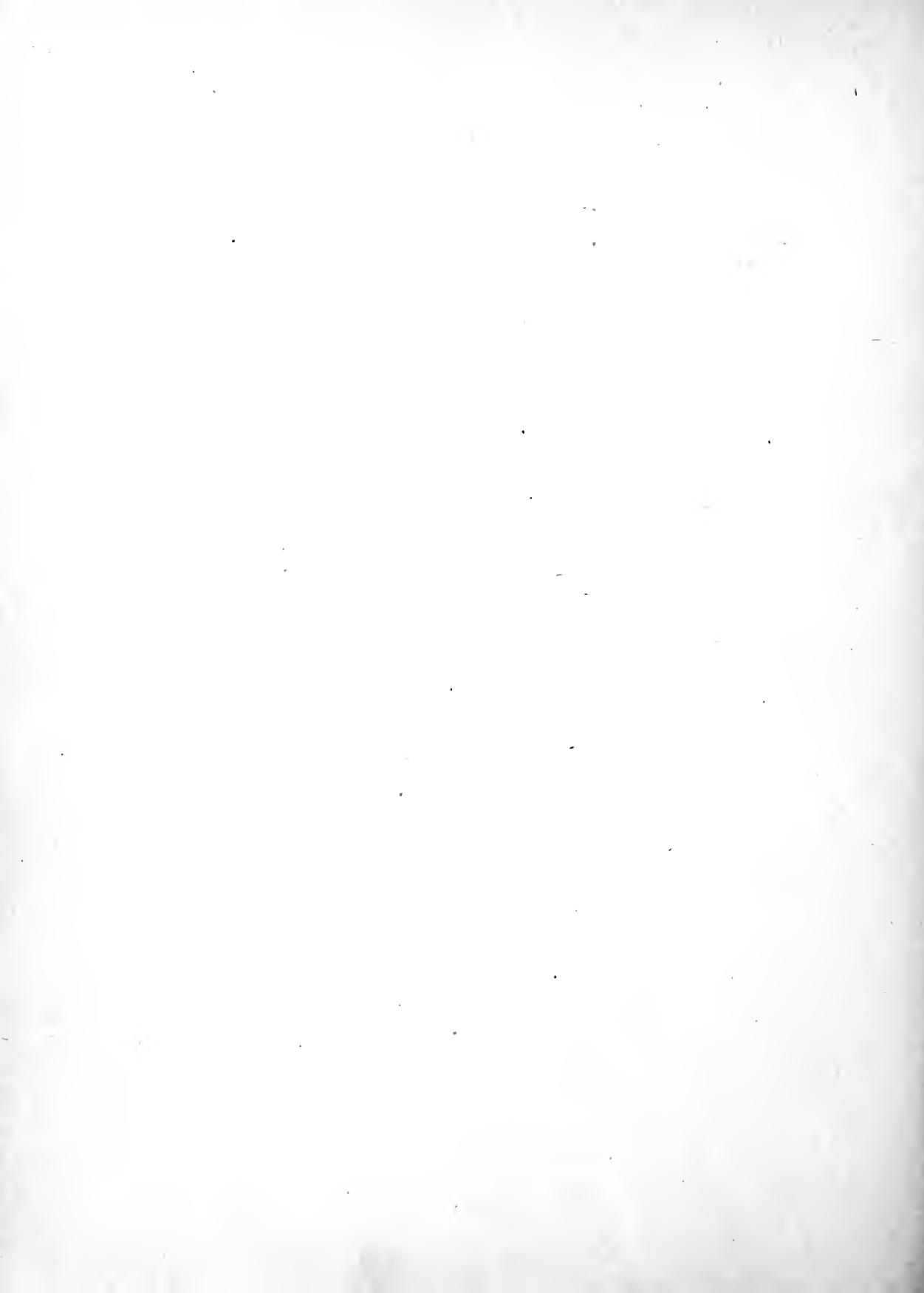
Perseus, even amid the stars, must take
Andromeda in chains ethereal.

MRS. BROWNING — *Paraphrases on Nonnus.*

PERSEUS, the son of Jupiter and Danaë, might be called the knight-errant of mythology. His earliest exploit was the slaying of the snaky-locked Gorgon, Medusa. Panoplied with Pluto's helmet of invisibility and with Minerva's polished shield, and shod with Mercury's winged shoes, he tracked the monster to her sea-girt cave, severed her horrid head, and flew away in safety. Coming to the western limit of the world, he found old Atlas, who, fearing lest he be robbed of his golden apples, refused to receive the youth ; whereupon Perseus held up the Gorgon's head before the giant and turned him into stone. There, in the gardens of the Hesperides, according to fable, he still stands, bearing the weight of the heavens upon his shoulders.

Perseus, flying once more through the air, saw far beneath him the lovely Andromeda chained to the rocks, and the slimy sea-monster approaching to devour





her. After a desperate struggle he succeeded in hacking the dragon in pieces and rescuing the maiden. At the wedding feast, which was a natural sequence to this knightly episode, Phineus, the former lover of the princess, burst in, demanding his promised bride and threatening to take her by force. Perseus reminded him that he should have claimed her earlier from the jaws of the horrid monster, but that now it was too late; for, since he had failed to prove himself a man, he should become but the stone image of one. Thereupon holding up the Gorgon's head he petrified the coward and his band of ruffians. Then the marriage bells pealed merrily, and conflicts were forgotten in happiness and peace. At their death this noble pair were transferred to the sky.

Charles Kingsley's *Andromeda*, after most beautifully telling the legend, makes Aphrodite thus address the heroine :

Courage I give thee, the heart of a queen and the mind of immortals,

God-like to talk with the gods, and to look on their eyes unshrinking.

Bearing a god-like race to thy spouse, till dying I set thee High for a star in the heavens, a sign and a hope for the seamen,

Spreading thy long white arms all night in the heights of the ether ;
Hard by thy sire and the hero, thy spouse, while near thee thy mother
Sits in her ivory chair, as she plaits ambrosial tresses ;
All night long thou wilt shine.

These two constellations are immediately south of Cassiopeia, Perseus being directly in the Milky Way, where, according to Aratus, he is stirring up a dust in his haste to liberate Andromeda. He still bears in one hand the head of Medusa, with its baleful, blinking demon-eye, Algol, which about every third day drops from the second magnitude to the fourth and recovers in a few hours.

Andromeda contains two very interesting telescopic objects. One is Almach, which Herschel pronounced the most beautiful double star in the heavens. Its components are deep yellow and sea-green, producing a fine contrast of color. The other is the great nebula. This is the only true nebula which can be certainly discerned without optical aid, being known to the Arabians as "the little cloud." Although a magnificent spectacle in the telescope, it requires photography to show its marvelous extent and involved structure.

AURIGA, THE CHARIOTEER

Star of the winter night,
Whose chill and threatening light
O'er the tempestuous main shineth afar!
Calm days of autumn bright
Reluctant take their flight,
When from the misty deep riseth thy ear.

ANON.

PASSING over Draco, coiled about the pole of the ecliptic and representing the dragon which guarded the golden apples in the gardens of the Hesperides, we come to constellations lying somewhat farther south, between the circumpolar groups and the zodiac. Southeast of Perseus is the widely extended Auriga, or Charioteer, though the name ill accords with the time-honored pictorial representation of a man carrying in his arms the goat Capella and the Kids, or Hædi.

This chariot driver has been identified with Erechtheus, the son of Vulcan, of whom Swinburne has written :

Thou hast loosened the necks of thine horses, and goaded their flanks with affright,

To the race of a course that we know not, on ways that are hid
from our sight.

As a wind, through the darkness the wheels of their chariot are
whirled,

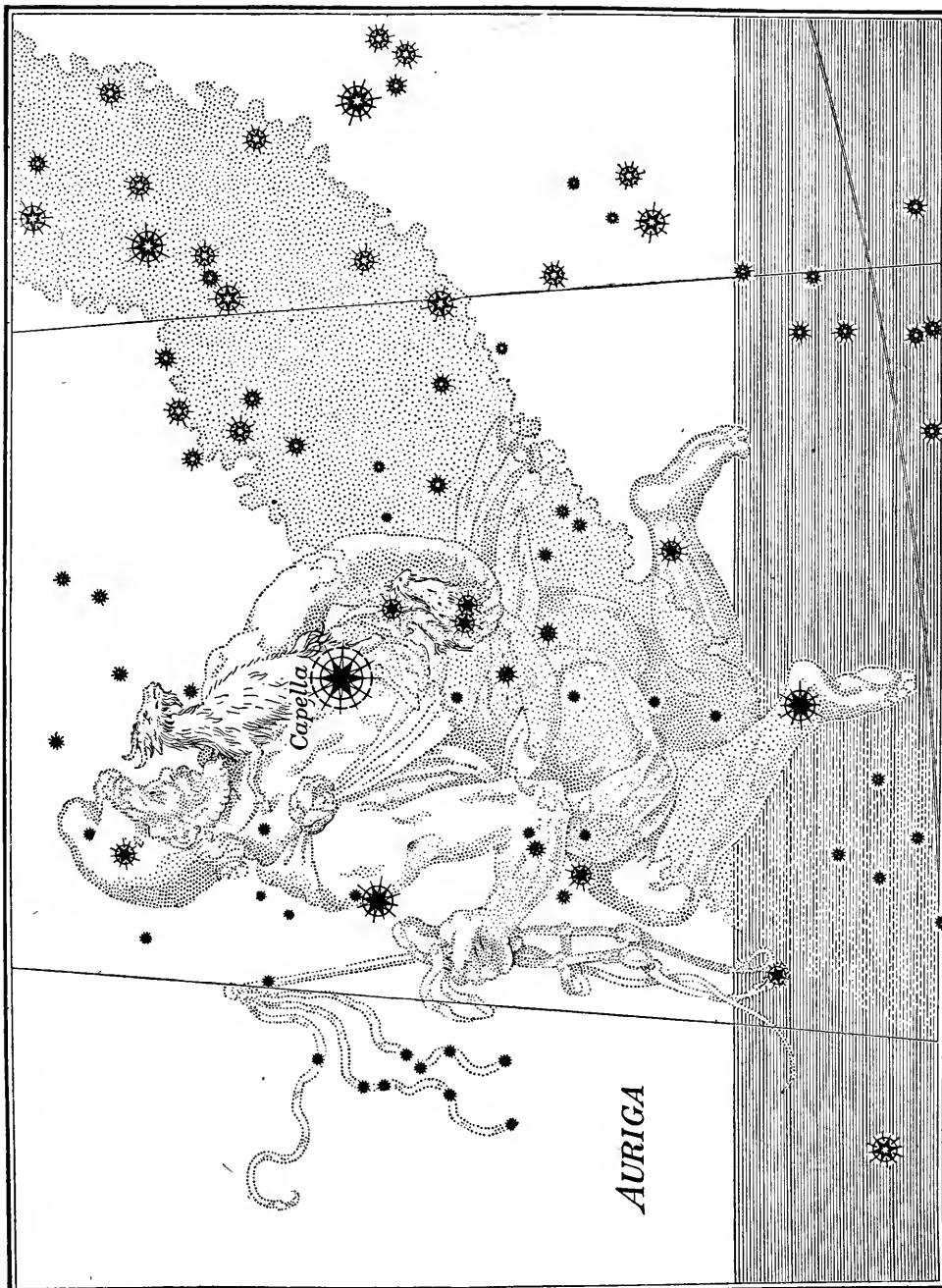
And the light of its passage is night on the face of the world.

The bright first magnitude Capella, the lucida of the constellation, represents the goat which suckled the infant Jupiter. According to one tradition, Amalthea herself was the goat, but more commonly she was the nymph who fed the young god on the goat's milk. Having in his play broken off one of the horns of the animal, Jupiter endowed it with the miraculous power of being filled with whatever the possessor might wish, whence it was called the cornucopia or horn of plenty.

The three small stars near Capella are the Kids, though more properly perhaps only the two southern ones should be so denominated. They were in extremely bad repute with the ancients, being termed by the classic writers "horrid and hurtful," and Callimachus in the third century B.C. counseled mariners :

Tempt not the winds, forewarned of dangers nigh,
When the Kids glitter in the western sky.

This connection of individual stars or constellations with certain seasons of the year, and therefore with



AURIGA

the probability of pleasant or tempestuous weather, was, of course, at best but local and temporary ; for the slow precession of the equinoxes, by gradually shifting the panoramic scenery of the skies, will in the course of ages make these same stars rulers over different seasons.

COMA BERENICES (BERENICE'S HAIR)

The streaming tresses of the Egyptian queen.

BRYANT — *The Constellations.*

JUST north of Virgo lies a group of faint stars, so crowded together that they present a nebulous appearance like a wisp of hair, or, as Serviss suggests, like “gossamers spangled with dewdrops, which the old woman of the nursery rhyme, who went to sweep the cobwebs out of the sky,” had overlooked.

The origin of this constellation, in its present form at least, dates back to the reign of Ptolemy Euergetes in the third century B.C. As the king was departing on a dangerous expedition against the Assyrians, his queen Berenice vowed, should he return in safety, to dedicate her lovely amber tresses to the goddess of beauty. Accordingly when the king marched home victorious, the hair was placed in the temple of Aphrodite, but shortly afterwards was stolen. This grieved the royal pair exceedingly, until Conon, the court astronomer, announced that Jupiter had taken the

locks and hung them in the sky, pointing to these stars which, it would seem, had up to that time been unrecorded.

The similarity of the name with that of the Herodian princess Bernice (in the Latin *Beronica*) has led to the association of this star group with the legend of Saint Veronica, who, in sympathy for the Saviour's sufferings on the way to the cross, lent him her veil to wipe the sweat from his brow, and found miraculously impressed thereon the true image of our Lord.

Not far from Berenice's Hair, across the constellation Leo, is the spot where the Capuchin De Rheita in the seventeenth century fancied he saw, with an improved telescope of his own construction, this same veil or napkin bearing the likeness of the divine countenance. This marvelous apparition is described in all seriousness in his work entitled *Oculus Enoch et Elice*, but as Sir John Herschel appropriately remarked, "Many strange things were seen among the stars before the use of powerful telescopes became common."

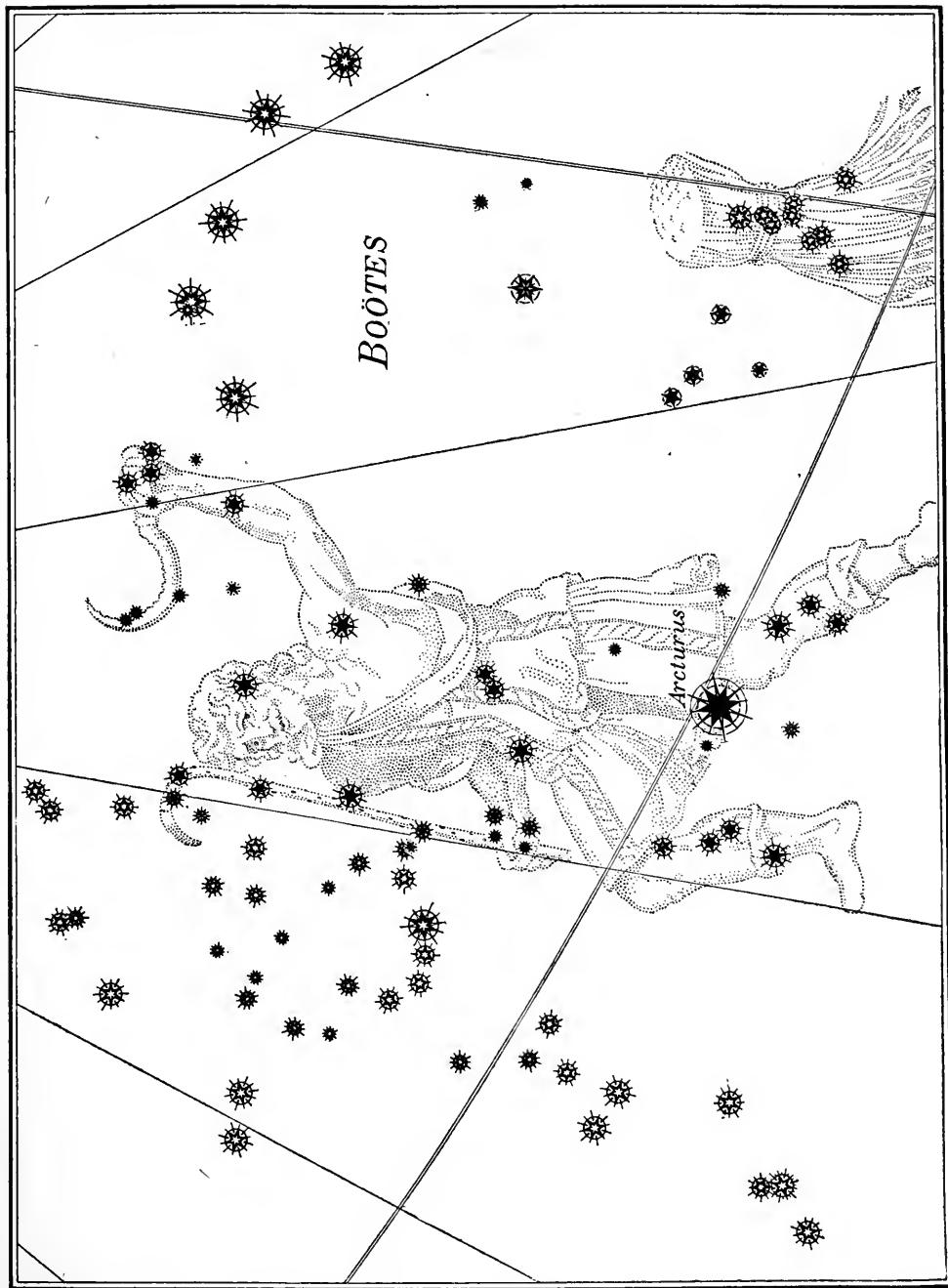
BOÖTES, THE HERDSMAN

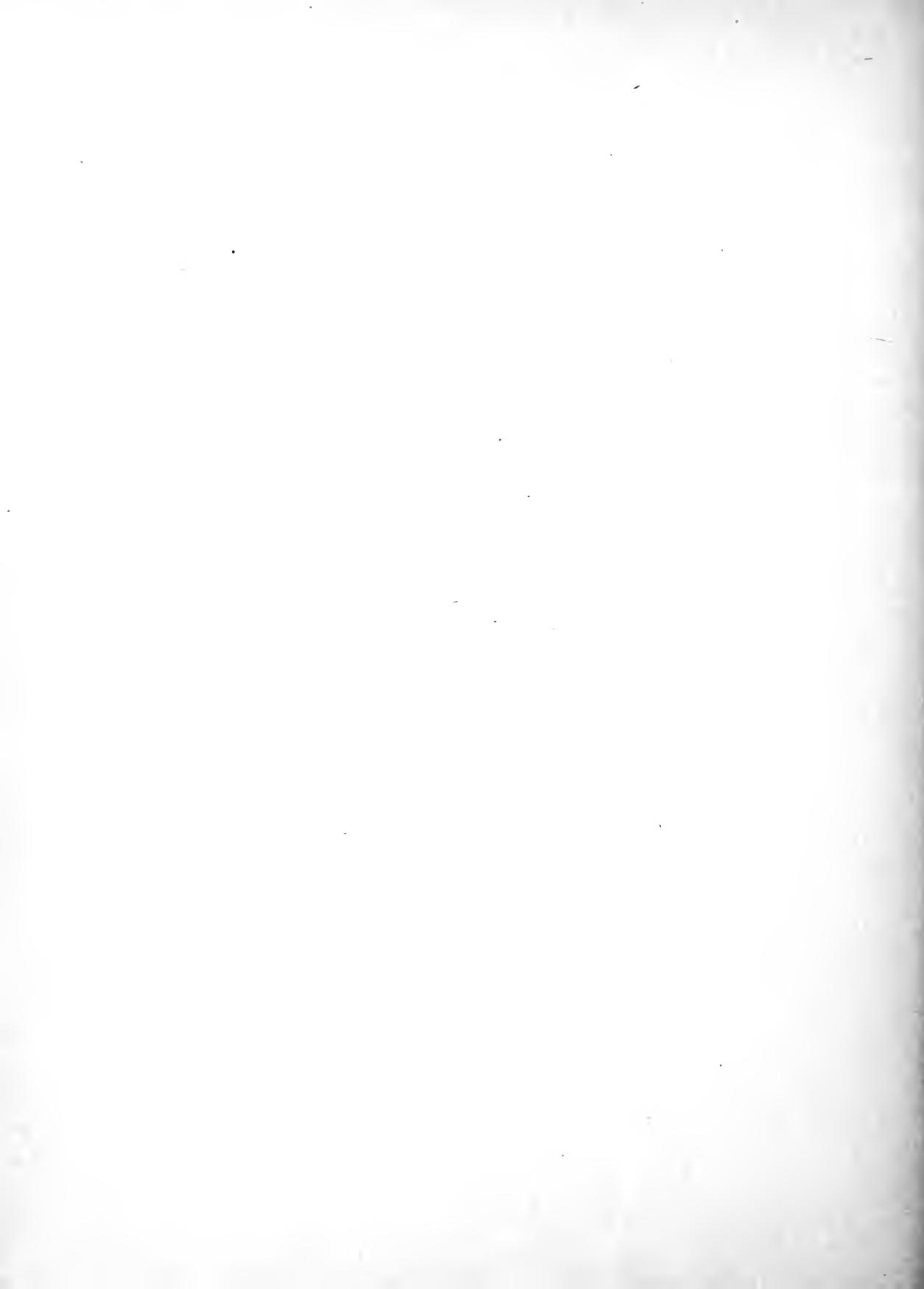
Not every one doth it become to question
The far-off, high Arcturus.

SCHILLER — *Death of Wallenstein.*

Boötes is usually translated the Herdsman, though the name really signifies Ox Driver, a much more appropriate title, since this constellation follows the seven plow-oxen of Ursa Major in their daily course around the pole. Our modern maps, however, follow the suggestion of Hevelius, a Polish astronomer of the seventeenth century, who placed the two hounds, Asterion and Chara, in front of Boötes, and represented him as a hunter pursuing the Great Bear.

The superb lucida of the group, Arcturus, was so designated by the Greeks, the name meaning Bear-guard. Smyth derives it from the similar Greek word for tail, making it signify "tail of the Bear." Although this etymology is probably incorrect, yet it is useful to remember that Arcturus lies in the prolongation of the Bear's tail and may thus be surely and readily identified. The biblical references to Arcturus, as already





noted, indicate Ursa Major rather than this star, the connection between the two names in the Greek language naturally leading to frequent confusion. In early days it represented a spear in the hunter's hand, and with the Arabs it was the Lance-bearer, as Emerson, translating the Persian poet Hafiz, has it :

Poises Arcturus aloft morning and evening his spear.

From the fact that in middle latitudes Arcturus is setting in the northwest just as Capella and the Kids are rising away in the northeast, the stormy character of the latter has been transferred also to this star. Demosthenes tells of an insurance policy issued on a vessel going to the Crimea and back, the rate being twenty-two and one-half per cent; but if she did not return before the heliacal rising of Arcturus in late September, the rate was to be thirty per cent. Horace also in his well-known ode extols the contented man who is disturbed not by the "fierce violence of the setting Arcturus or of the rising Kids."

Cor Caroli.—This is a fine double star, which on modern maps is located in the heart between the two hunting dogs of Boötes. The story goes that Scarborough, the court physician, on the evening before the return of Charles II to London, beheld this star

shine out with peculiar luster, and thereupon suggested to the astronomers that it be named in honor of the king. "The merry monarch," who, we are told, "never said a foolish thing, and never did a wise one," was certainly hardly worthy of being commemorated in so exalted a fashion; yet to his credit it should be remembered that he issued the decree for the founding of the royal observatory at Greenwich, an institution whose influence in the extension of commerce and civilization has been exceedingly beneficent.

CORONA BOREALIS, THE NORTHERN CROWN

And still her sign is seen in heaven,
And, 'midst the glittering symbols of the sky,
The starry crown of Ariadne glides.

APOLLONIUS RHODIUS.

THIS little constellation lies just east of Boötes, and is one of the few which really resemble the objects they commemorate. It is a beautiful circlet of stars forming an admirable wreath or tiara.

The legend of Ariadne and her crown, which has always been a popular one in literature, is interlinked with that of Theseus and Bacchus. At the time when the young prince Theseus was making a name for himself by his wonderful exploits, the Athenians were in deep distress because of the tribute they were forced to pay each year to Minos, king of Crete. This tribute consisted of seven youths and seven maidens ; and a most horrible fate was theirs, for they were imprisoned in a labyrinth so artfully constructed that no one could possibly escape, and a hideous Minotaur, with bull's body and human head, soon caught and devoured them.

Theseus resolved to deliver his countrymen from this calamity, and accordingly offered himself as one of the victims. On arriving at Crete they were inspected by King Minos; and it happened fortunately that his daughter Ariadne was present and fell deeply in love with Theseus. She furnished him with a sword and a clew of thread, by means of which the hero succeeded in slaying the monster and escaping from the labyrinth. Taking Ariadne with him he sailed for Athens, but stopped on the way at the island of Naxos, where he basely deserted his newly made bride while she slept.

But Venus, taking pity on her, promised that she should have an immortal lover instead of the mortal one she had lost. Bacchus, just returning from his triumphal progress through Asia, landed on the island, and finding the fair Ariadne in tears, consoled and wedded her, and gave her this glorious crown as a marriage present. At her death it was transferred to its place in the sky, the gems changing into glittering stars.

According to some of the classic writers this group represents the coiled hair of Ariadne, or even the beautiful maid herself, upon whom Bacchus conferred immortality. Spenser in the *Faërie Queene* follows

yet another form of the legend, making the crown a gift of Theseus:

Looke! how the crowne which Ariadne wore
Upon her yvory forehead, that same day
That Theseus her unto his bridale bore,

• • • • •
Being now placed in the firmament,
Through the bright heavens doth her beams display,
And is unto the starres an ornament,
Which round about her move in order excellent.

HERCULES

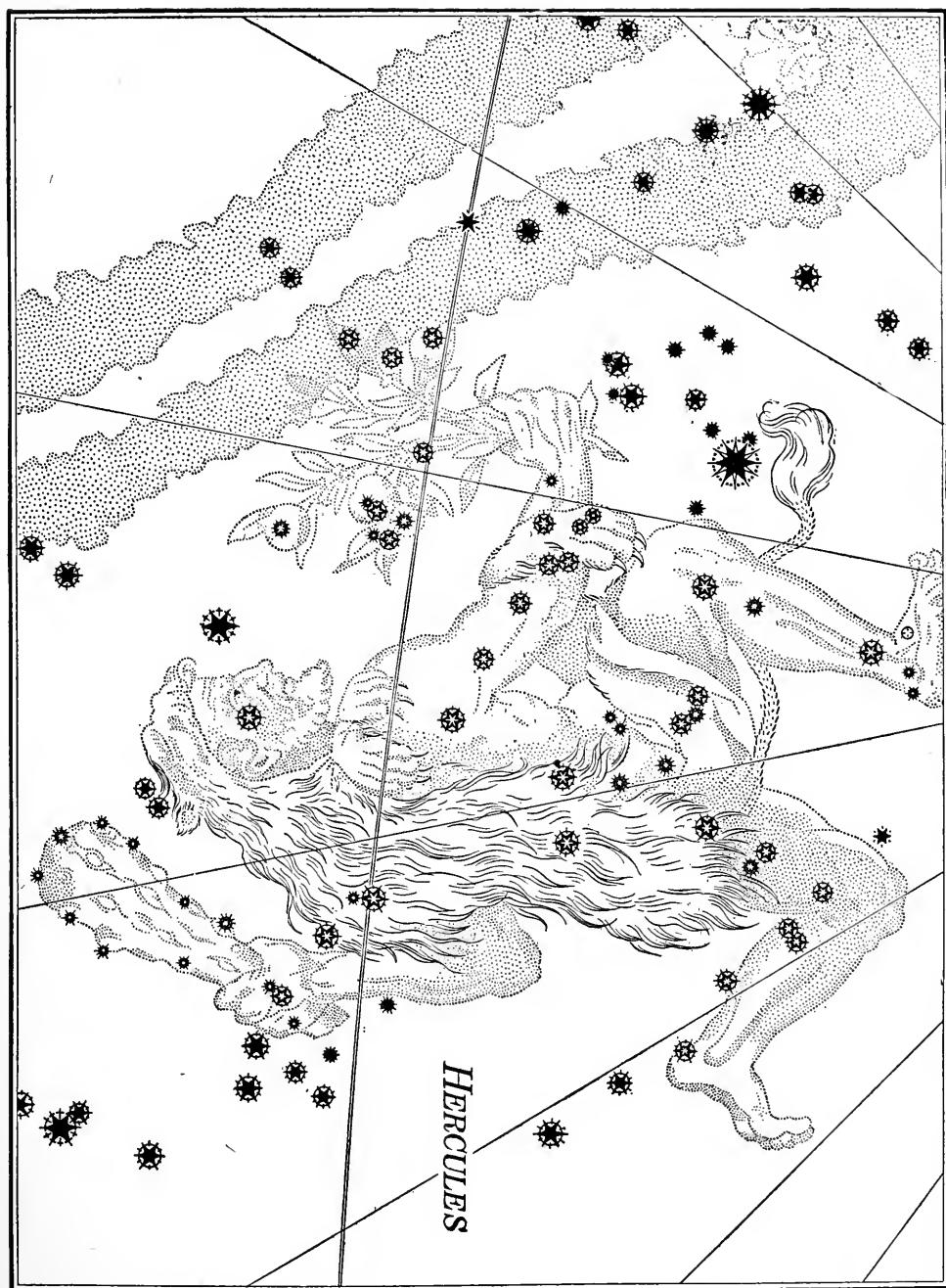
Great Alcides, stooping with his toil,
Rests on his club.

POPE.

THE huge sky-figure Hercules lies next to Boötes on the east, the little stellar garland last described just finding room between the two giants. Although the constellation is extremely ancient, its present name seems to have been unknown to the early Greek astronomers. Aratus thus describes it:

Like a toiling man, revolves
A form. Of it can no one clearly speak,
Nor to what toil he is attached; but, simply,
Kneeler they call him.

As now usually represented, one foot rests on the head of Draco; in his right hand he holds a club, and in his left a branch around which serpents are twisting; while over his shoulders is thrown the hide of a lion. The latter, of course, recalls his conquest of the Nemæan lion, already alluded to. The slaughter of the Hydra is symbolized by the serpent's head under his foot; while the apple bough was no doubt intended



to represent the golden fruit of the Hesperides, which Hercules was obliged to wrest from the clutches of the sleepless dragon that guarded the tree. On some maps we find this branch in the giant's left hand replaced by Cerberus, the triple-headed guardian of the lower regions, one of the last of the celebrated twelve labors having been to throttle this horrid creature and bring him up to the light of day.

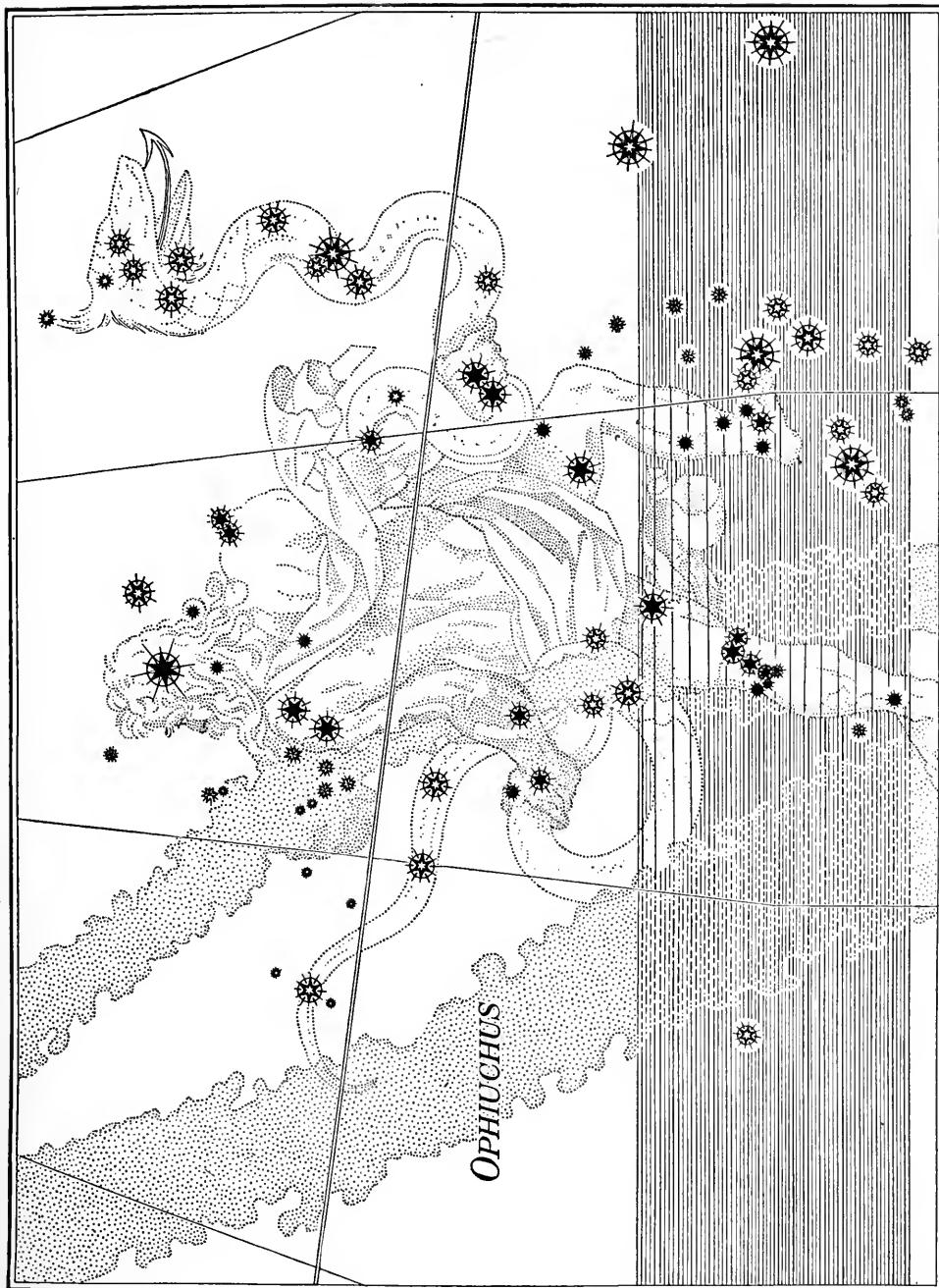
The Hercules Cluster.—The great cluster, lying on the west side of the trapezium which marks the giant's body, is one of the most remarkable objects in the heavens. Halley wrote of it in 1716: "This is but a little patch, yet it shows itself to the naked eye when the sky is serene and the moon absent." The telescope, however, resolves it into a glorious company of glowing suns. Although its diameter is less than eight minutes of arc, and its area therefore not over one-sixteenth that of the full moon, there are crowded together within its borders, according to a conservative estimate, as many as three or four thousand stars. Yet this crowding is probably only apparent. No doubt its real extent is so tremendous that there would be plenty of room for planetary systems to revolve undisturbed about each member of the group.

OPHIUCHUS, THE SERPENT-BEARER

Satan stood
Unterrified, and like a comet burned,
That fires the length of Ophiuchus huge
In th' arctic sky, and from its horrid hair
Shakes pestilence and war.

MILTON—*Paradise Lost.*

LYING south of Hercules we come upon Ophiuchus, the Serpent-bearer. Milton, who is usually correct in his astronomical allusions, blundered sadly in the lines above quoted ; for Ophiuchus lies upon the celestial equator, and can by no stretch of poetic license be considered an arctic constellation. It is supposed to represent Æsculapius, the son of Apollo, and prototype of the medical fraternity. So skilled did he become in his profession that he was reputed to be able even to raise the dead to life. Pluto took offense at this, fearing lest his kingdom should become depopulated ; and at his request Jupiter launched a thunderbolt against the bold physician, and so scattered his precocious wisdom that none of his numerous descendants seems as yet to have succeeded in recovering it.



Apollo, however, insisted that his son be placed in the sky, where his healing arts, if they can do no good, can certainly do no harm. The association of the serpent with this constellation may perhaps indicate the miraculous powers which are usually ascribed in the Orient to snake-charmers.

The foregoing is the generally accepted explanation of this figure; but an altogether different interpretation is sometimes given, by which Ophiuchus is identified with Laocoön, the priest of Neptune, who, during the siege of Troy, was attacked and strangled by sea-serpents for his irreverent treatment of the wooden horse.

LYRA, THE LYRE; DELPHINUS, THE DOLPHIN; AQUILA, THE EAGLE

I saw, with its celestial keys,
Its chords of air, its frets of fire,
The Samian's great Æolian lyre,
Rising through all its sevenfold bars,
From earth unto the fixéd stars.

LONGFELLOW — *Occultation of Orion.*

The Lyre of Orpheus. — Few probably have not noticed and admired the brilliant star which culminates nearly overhead in our summer evenings. This is Vega, the Harp-star ; and indeed, with the help of the smaller stars close by, the rude resemblance to a lyre or harp may easily be traced. According to the common version this was the lyre of Orpheus, and his skill upon it was such, that when Eurydice shortly after their marriage was snatched from him, he succeeded in so charming the guardians of the Stygian realms that they allowed him to enter. Presenting himself before the deities which presided over this kingdom of ghosts, he sang

Such notes as, warbled to the string,
Drew iron tears down Pluto's cheek,
And made him grant what love did seek.—MILTON.

Consent was given that Eurydice accompany her husband back to the upper world ; but the condition imposed, that he look not back to see if she were following, proved too much for his anxious love, and he again lost her. Yet the lyre that could bring tears to the eyes of the furies and melt the heart of stern Pluto, was thought worthy of a place among the stars.

Legend of Arion and the Dolphin. — By some of the poets Lyra has been called the harp of Arion, the legend concerning whom connects it with the little Dolphin not far off to the southeast. Arion was a famous musician of the court of Periander, king of Corinth. Returning from a musical contest in Sicily, where he won a valuable prize, he was seized by the sailors who coveted his treasure. As they were about to throw him overboard, he requested permission to play for the last time upon his harp. The dolphins, lured by the sweet strains, surrounded the ship ; and when he slipped into the water, one of them took him upon its back and bore him safely to land.

Vega. — The resplendent Vega, or Wega, as sometimes written, derives its name from the Arabic, and signifies “falling eagle.” In Bayer’s *Uranometria*,

published early in the seventeenth century, the eagle is actually represented standing behind the harp and holding the star in its beak. Vega ranks with Capella in brightness, being surpassed only by Sirius and Canopus. Its sapphire hue justifies the appellation "arc-light of the sky."

The Double-Double.—A little to the northeast of Vega is the celebrated quadruple star. An exceptionally keen eye can distinguish its duplicity, while the telescope shows both components to be further divisible. Each pair seems to be revolving in one or two thousand years, and their common drift through space renders it probable that the two couples form one greater system, whose period of revolution must stretch far on towards a million years.

Ring Nebula.—Very interesting too is the ring nebula of Lyra, the only object of this character accessible to ordinary telescopes. It consists of an oval ring somewhat over a minute in diameter, "the interior of which is filled with a dim nebulous haze, like gauze stretched over a hoop."¹

Aquila.—Southeast of Lyra is the constellation Aquila, figured as a flying eagle, such being the

¹ Miss Clerke's *System of the Stars*.

meaning of Altair, its chief star. It was known to the classic writers as the bird of Jove and bearer of his thunder. In its talons it holds the beautiful Ganymede, whom Jupiter, desiring for his cup-bearer, sent this eagle to seize and carry up to heaven. Occasionally the name Antinöus is given to this youth, while Ganymede is recognized in Aquarius, the zodiacal constellation. The former interpretation is preferable as being that usually adopted in literature. Tennyson in his *Palace of Art* describes the picture representing this legend:

Or else flushed Ganymede, his rosy thigh
Half buried in the eagle's down,
Sole as a flying star shot through the sky
Above the pillared town.

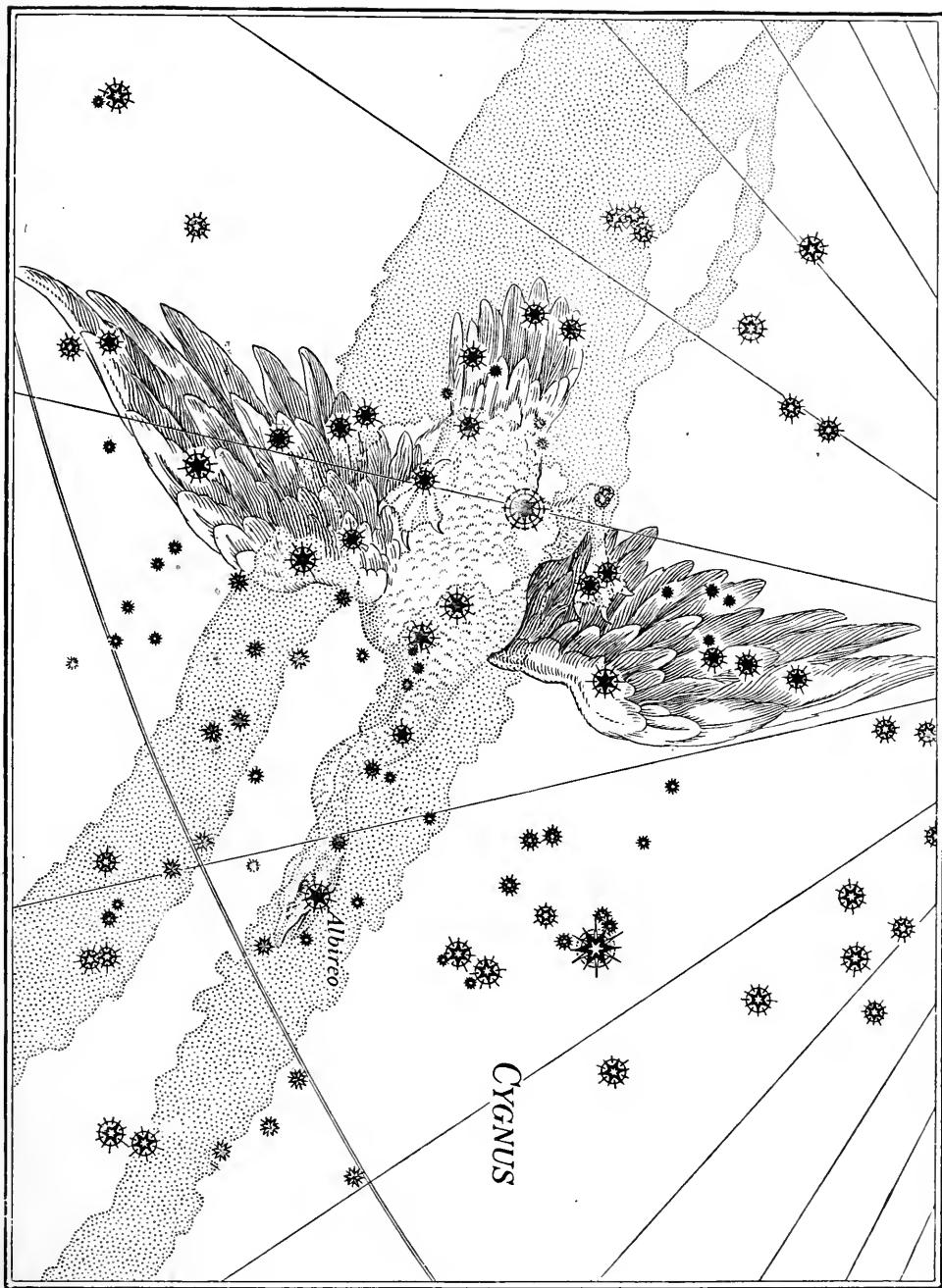
CYGNUS, THE SWAN

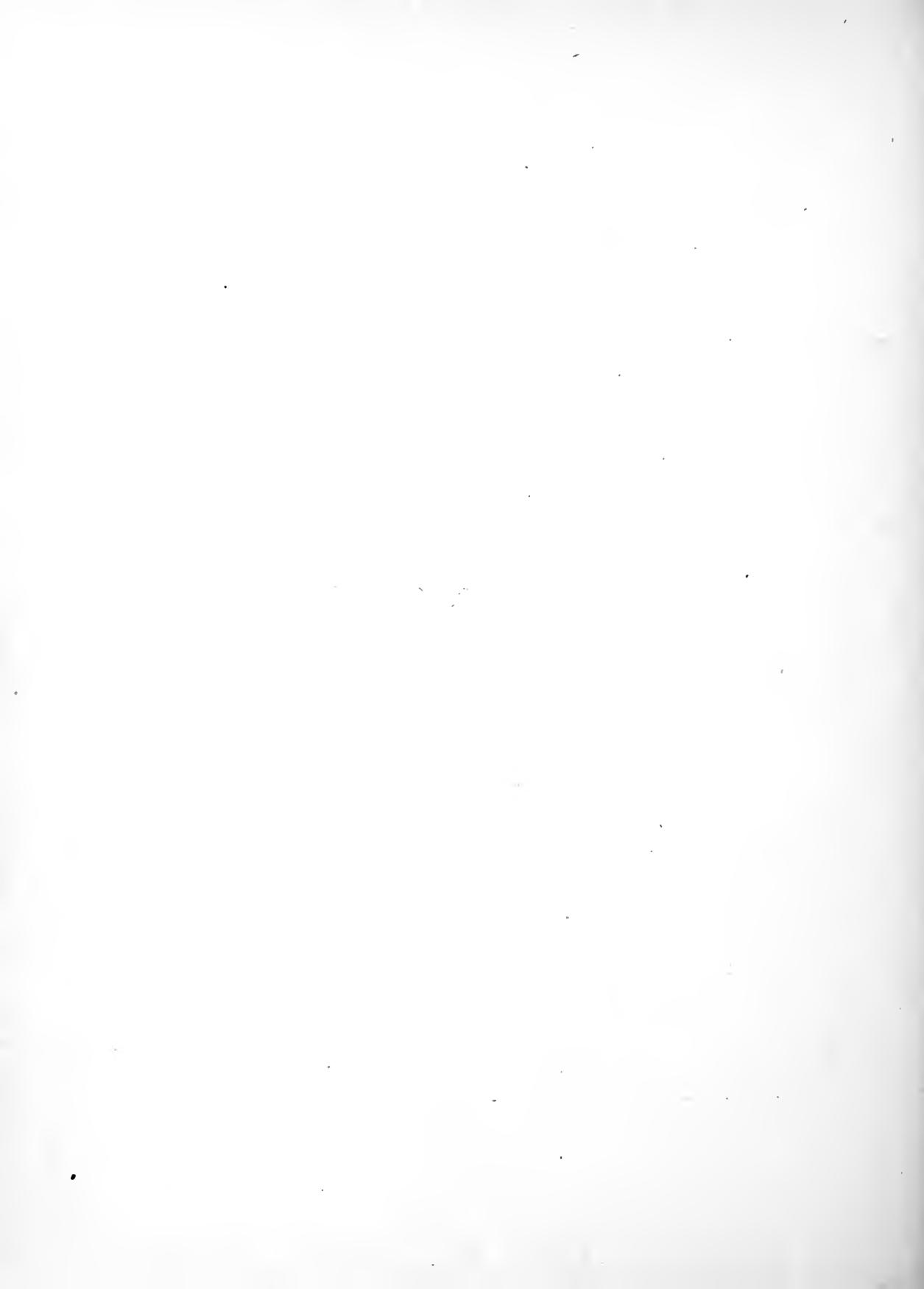
Down the broad galactic river,
Where the star-beams dance and quiver,
Flies the swan with grace transcendent,
Bearing on its wings resplendent
Sacred cross of death and glory,
Emblem of redemption's story.

ANON.

Cycnus. — This beautiful constellation, lying just east of Lyra and directly in the Milky Way, represents mythologically Cycnus¹ (as properly written), the son of Mars and most intimate friend of Phaëthon. When the latter, after his disastrous drive in the chariot of the sun, was hurled into the river Eridanus, Cycnus lingered about the spot, and frequently plunged beneath the flood, seeking some relic of his lost companion. But the gods finally grew angry and changed him into a swan; and therefore it is that this bird “ever sails about in the most pensive manner, and frequently thrusts its head into the water.” Ovid thus describes this metamorphosis :

¹ The constellation is written Cygnus, the mythological name Cycnus.





His voice was lessened as he tried to speak,
And issued through a long extended neck:
His hair transforms to down; his fingers meet
In skinny films, and shape his oary feet:
From both his sides the wings and feathers break,
And from his mouth proceeds a blunted beak:
All Cyenus now into a swan was turned.

The Northern Cross. — The principal stars of Cygnus form the northern cross, so well known to all star-gazers. Exquisitely does Lowell picture its place among the constellations that preside over the opening of the New Year:

Orion kneeling in his starry niche,
The Lyre whose strings give music audible
To holy ears, and countless splendors more,
Crowned by the blazing Cross high-hung o'er all.

Albireo and 61 Cygni. — The star Albireo in the Swan's head is one of the most lovely objects in the sky, its components being golden and azure, and so well separated that a very small telescope will reveal them. The faint pair lying on the left wing, known as 61 Cygni, is deserving of notice, not so much from any intrinsic interest, as because "these little suns were the first of all the starry host to reveal to Bessel the secret

of their distance.”¹ Light requires nearly ten years to travel thence, so that we do not perceive them as they now are, but as they were a decade ago. Yet, as Webb finely remarks, “not one in a million of the stars but lies at a distance incalculably exceeding that of 61 Cygni. How vast must be the dimensions of this great universe! What a temple for the Creator’s glory!”

¹ Webb’s *Celestial Objects for Common Telescopes*.

PEGASUS, THE WINGED HORSE

I dreamt that I flew through the vaulted blue,
 Like Pegasus of old,
That wingéd steed of heavenly breed,
 Which bore Bellerophon bold.

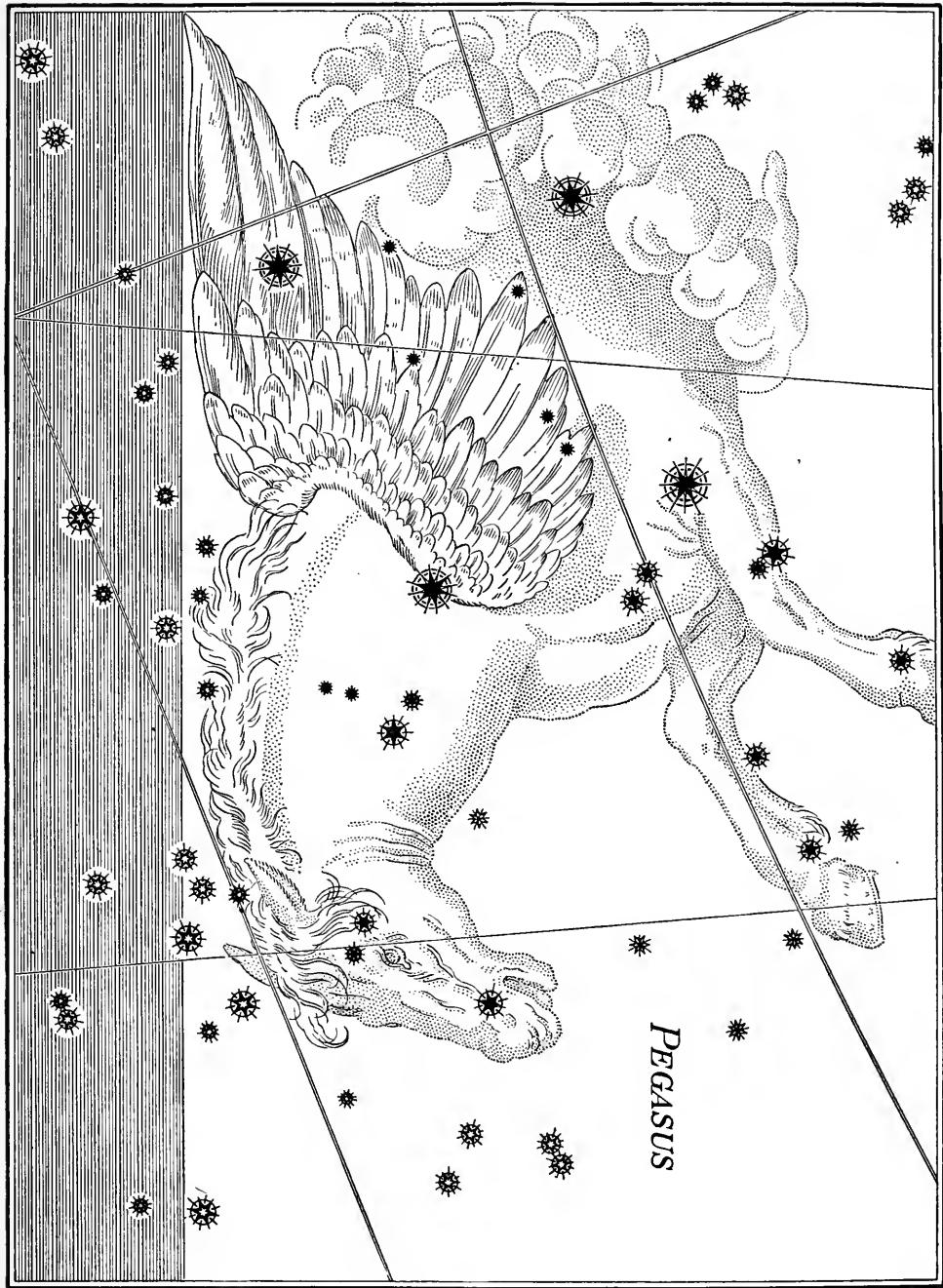
ANON.

STILL to the eastward we come to Pegasus marked by the well-known square. The northeastern star of this square, however, lies in the head of Andromeda, and may conveniently serve to locate that constellation.

All doubtless are familiar with the story of Pegasus, so charmingly told in Hawthorne's *Wonder Book*. Although he sprang from the blood of the hateful Gorgon, he seems nevertheless to have been an amiable steed. Being presented by Minerva to the Muses, he took up his abode on Mount Helicon, where with a blow of his hoof he opened up that fountain at which every poet must drink ere he can soar on Pegasean wing. Here it was that Bellerophon caught him with Minerva's golden bridle ; but after slaying the Chimæra, this hero grew too presumptuous and attempted to fly

up to heaven, whereupon Jupiter sent a gadfly which stung Pegasus and caused him to throw his rider.

With Pegasus we have completed our review of the principal constellations north of the zodiac. Among those that lie south of this circle only a few are of sufficient interest to claim our attention. The region of the sky about the south pole was, of course, practically unknown to the classic astronomers, and most of its star-figures are of recent date.



ORION

Begirt with many a blazing star
Stood the great giant Algebar,
Orion, hunter of the beast !
His sword hung gleaming by his side,
And on his arm the lion's hide
Scattered across the midnight air
The golden radiance of its hair.

LONGFELLOW — *Occultation of Orion.*

Brilliancy of Orion. — The question is often asked whether the atmosphere in winter is not clearer than in summer, since the heavens never appear so brilliant as on a crisp frosty night. The reason of this does not lie in the transparency of the air. Partly no doubt it is due to its disturbed condition which causes the stars to flash and twinkle, but chiefly to the fact that the winter constellations outrank in splendor those that preside with their milder radiance over the summer months.

Supreme in the glittering skies of our northern winter reigns Orion. He is mentioned several times in the Bible, the reference in the ninth chapter of Job

to "the Seven stars, Orion and the Pleiades, and the chambers of the south," being intended as a comprehensive description of the whole starry heavens, the Seven stars, or Great Bear, representing the arctic skies, Orion and the Pleiades, the equatorial regions, and the chambers of the south, that portion near the south pole which to a northern observer is closed or concealed.

Threatening Character. — Orion's huge size and threatening posture, combined with the stormy character of the time of year when he rises, gave him an extremely evil reputation with the classic writers, who hurled against him all sorts of ugly invective,—rainy, tempestuous, destructive to sailors and altogether "horrid"! According to Polybius the loss of the Roman fleet in the first Punic war was due "to the obstinacy of the consuls, who, despite of the pilots, would sail between the risings of Orion and Sirius, always a squally time." Milton also in *Paradise Lost* alludes to the boisterous character of this constellation :

When with fierce winds Orion armed
Hath vexed the Red sea coast, whose waves o'erthrew
Busiris and his Memphian chivalry.

Mythology. — Mythologically, he was a hunter or warrior-giant, though the legends about him are

conflicting. One account made him the lover of Merope, daughter of Ænopian, king of Chios. After Orion had rendered the king most valuable service by clearing his realm of wild beasts, he demanded Merope's hand in marriage, but was refused. Thereupon he attempted to take her by force. Ænopian, enraged, made him drunk, and having put out his eyes, cast him on the seashore. Following the sound of the hammer, the giant made his way to Vulcan's forge and besought his help. Vulcan gave him the services of a cyclops to be his guide, and Orion, placing him on his shoulders, proceeded to the east, and there meeting the sun-god, was restored to sight, as Longfellow relates:

But he

Reeled as of yore beside the sea,
When blinded by Ænopian
He sought the blacksmith at his forge,
And climbing up the narrow gorge,
Fixed his blank eyes upon the sun.

According to another story he was the companion of Diana, who fell in love with him and would have married him, had not her brother Apollo put a stop to the mad project by causing the Scorpion to sting him. At the intercession of the goddess, however, he was

placed in the sky opposite to the Scorpion, so that he might escape in the west as that loathsome reptile lifted its head above the eastern horizon. Aratus refers to this arrangement in his poem :

When the Scorpion comes
Orion flies to the utmost end of earth.

Culminating on the meridian the giant is upright, but as he approaches the horizon his position becomes more and more inclined. Tennyson, with his customary accuracy, writes in *Locksley Hall* of

Great Orion sloping slowly to the west.

In *Maud*, too, he thus beautifully pictures the western sky at the opening of spring :

It fell at a time of year
When the face of the night is fair on the dewy downs,
And the shining daffodil dies, and the Charioteer
And starry Gemini hang like glorious crowns
Over Orion's grave low down in the west.

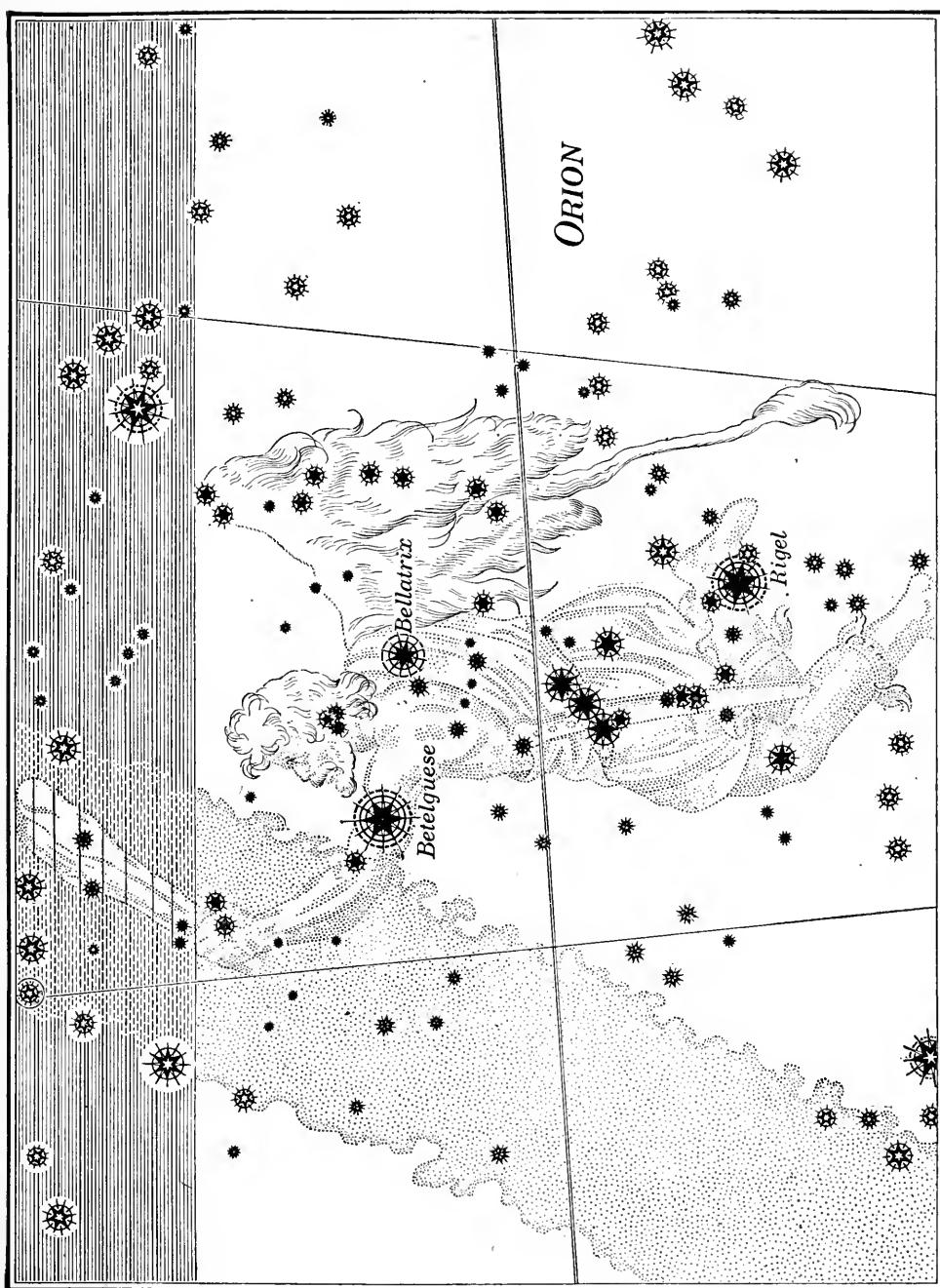
The Stars of Orion. — Of the brilliants in this constellation, Betelguese, meaning “armpit,” marks the right shoulder ; Rigel, sometimes called Algebar, the left foot ; while Bellatrix, the female warrior or Amazon star, lies on the left shoulder. The three stars in the

ORION

Bellatrix

Betelgeuse

Rigel



belt constitute the golden yardarm of seamen, and the yardstick or ell of tradesmen, besides being popularly known as the Magi or three wise men from the Orient, and the three Marys. Tennyson in *The Princess* describes them as

Those three stars of the airy Giant's zone
That glitter burnished by the frosty dark.

The celestial equator now passes just above the northern one of the three. In 1807 the University of Leipsic resolved that the stars belonging to the belt and sword of Orion should in future be called Napoleon. As Thomas Hood two centuries earlier had told us that "this fellow was placed in heaven to teach men not to be too confident in their own strength," there was, perhaps, very good ground for the proposed change of appellation; but the new name has never been adopted by the map-makers.

Great Nebula of Orion. — The telescope does not reveal in all the heavens a more wonderful object than the great nebula lying just below Orion's belt. It is frequently called the fish-mouth nebula, from the rude resemblance to the head of some marine monster. Its brilliancy is not uniform, and the glare of the brighter

portions contrasts strongly with the darker regions, giving one a "sensation of looking through into the luminous regions of illimitable space." Sir John Herschel, viewing it through his twenty-foot reflector, compares it to a curdling liquid, or to the breaking up of a mackerel sky. Involved in it is the fine multiple star, known as the trapezium from the configuration of its four principal components.

CANIS MAJOR AND CANIS MINOR, THE GREAT AND LITTLE DOGS

Th' autumnal star, whose brilliant ray
Shines eminent amid the depth of night,
Whom men the dog-star of Orion call.

LORD DERBY—*Translation of Homer's Iliad.*

Sirius, the Dog Star.—Homer's oft-mentioned Dog was simply the star Sirius, our present constellation being the creation of a later date. In another passage of the *Iliad* besides the one above quoted, Sirius is alluded to as

The star of autumn laved by ocean's wave.

The time of year intended by Homer was no doubt the latter part of July or the first of August when Sirius rose just before the sun; but we may still very properly call it autumn's star, for late in the fall, when the wind has stripped the trees and the hoarfrost sparkles on the ground, Sirius, large and brilliant, begins to loom in the evening sky.

No other star visible in our northern latitudes remotely rivals Sirius in splendor. By the Arabs it was

known as Al Shira, the shining one; in fact, the word Sirius signifies in the Greek “scorching” or “sparkling.” We can scarcely wonder that the ancients attributed the burning heat of summer to the commingling of the rays of this star with those of the sun, their canicular or dog days being reckoned from its heliacal rising. It thus came to pass that, although so beautiful, it acquired a very evil reputation, all the discomforts and ills of the torrid season being ascribed to its influence. Pope’s translation of Homer’s lines,

Terrific glory! for his burning breath
Taints the red air with fevers, plagues, and death,

well expresses the popular estimate in classic days of the noxious effects of this glowing orb.

The Nile Star. — In Egypt, however, Sirius bore a very different character. Some five thousand years ago, before precession had carried it so far to the eastward, it rose with the sun at the time of the summer solstice, and hence heralded the approach of the Nile inundation. It was, therefore, naturally held in great reverence as the Nile star, and had many temples dedicated to its worship. Sir Edwin Arnold in his *Egyptian Princess* voices the unquestioned belief in the star’s potent influence:

And ever when the Star of Kneph has brought the summer round,
And the Nile rises fast and full along the thirsty ground,
They bear her from her rock-hewn tomb to where the sun's bright light
May linger on the close-bound eyes were once so glad and bright;
And strew palm clusters on her breast, while gray-haired singers tell
Of the high Egyptian lady who loved the sun so well.

Twinkling of Sirius.—Not only is Sirius the most luminous of all the fixed stars, it also exhibits in the most marked manner the phenomenon of scintillation or twinkling. This is due both to its brightness and to its low altitude as seen from northern stations. While it is in reality an intensely white star, its twinkling gives the impression of a many-colored, changeful light, as Tennyson most correctly and beautifully describes it in *The Princess*:

The fiery Sirius alters hue,
And bickers into red and emerald.

The scientific explanation of twinkling is found in the composite nature of the ray of light which proceeds from the star, and which in its passage through the atmosphere becomes more or less broken up.

The Little Dog, Procyon. — Canis Minor, the other hound of Orion, was known to the Greeks as Procyon, a term which we now apply only to the principal star. It means “precursor of the Dog,” that is, of Sirius. While it lies somewhat to the east, it is also much farther north than the Greater Dog, and hence with us rises first. When, however, Sirius comes to the western horizon, Procyon is almost directly above it towards the zenith.

The Companions of Sirius and Procyon. — Both Sirius and Procyon have in recent years been found to be double. The companion in each case, though heavy enough to sway the brighter star to a quite perceptible degree, is a body of very inferior luster. Thus Sirius has only twice the mass of its companion, yet it gives ten thousand times as much light. In the Procyon system the disparity between mass and luminosity is even greater; while in Algol and other stars of its class the satellite seems to be entirely dark. Discoveries like these suggest the possibility that the telescope fails to reveal the full extent of the universe, and that the conjectures of Laplace and Bessel of the existence of countless orbs, grand but invisible, may yet prove well founded.

ARGO NAVIS, THE SHIP ARGO

Then with a whistling breeze did Juno fill the sail,
And Argo, self-impelled, shot swift before the gale.

ELTON — *Translation of Oenomaclitus.*

ONLY a portion of this constellation rises above the horizon in middle latitudes, its principal star, Canopus, first becoming visible on the southern border of the United States. Yet it was one of the original forty-eight asterisms, well known in classic times.

The Legend. — This ship was built for Jason, the leader of the Argonautic expedition which sailed from Greece to Colchis in quest of the golden fleece. Pallas Athene herself took a hand in its construction and placed in the vessel's prow a timber from the speaking oak of Dodona, which should serve to guide and warn the adventurous chieftains who formed the crew. One of the most thrilling adventures on the outward voyage was the passing of the Symplegades, or clashing rocks. These guarded the entrance to the Euxine sea ; and, tossing back and forth, were almost sure to crush any boat that attempted to sail between them. By the

advice of Phineus the Argonauts first let go a dove, which skimmed through in safety, losing only some of the feathers of her tail. Taking advantage of the rebound, they bent to their oars and barely succeeded in effecting the passage before the rocks again crashed together. The stern of their vessel, indeed, did not wholly escape, but was more or less broken ; and so it is represented on the maps, though some writers insist that it is the bow of the ship that is wanting. This, however, is evidently a mistake. On Bayer's map of 1639, we have a very interesting delineation of the passage of the swinging rocks, the Argo being pictured as just emerging, with her stern torn off by their deadly impact. After the fortunate completion of the voyage the vessel was placed in the sky by Athene. If, as many hold, this story contains a substratum of truth, and actually brings down to us the account, highly colored of course, of the first important commercial expedition to what was then the far east, we may well look upon the celestial Argo with more than ordinary interest.

Canopus. — Canopus, the lucida of this constellation, which lies just below our horizon where the prow of the Argo cuts the water, is, after Sirius, the brightest star in the heavens. Canopus was the chief pilot of

the fleet of Menelaus. On the return voyage after the Trojan war, they landed in Egypt, where Canopus died and was buried. His name was given to the city founded upon the site, and to this star which rose just above the horizon. This, at least, is the popular derivation of the name as given by Plutarch.

Long, long before this visit of the Grecian warriors to the shores of Egypt, which thus resulted in naming the star, the magnificent orb itself was known and worshiped on the banks of the Nile. Lockyer concludes that several temples in Upper Egypt were not unlikely oriented to its setting more than eight thousand years ago! That it held an important place in the early cult of that country there can be no doubt. The reference to it in Moore's *Lalla Rookh* will be recalled in this connection :

As on some black and troublous night
The Star of Egypt, whose proud light
Never hath beamed on those who rest
In the white islands of the west,
Burns through the storm, with looks of flame
That put heaven's cloudier eyes to shame.

It might also well be designated the Desert Star, for not only was it much used by the wild, wandering

tribes in tracking their way through the pathless wastes, and in regulating their calendar, but it naturally became an object of worship among them. Carlyle in *Heroes and Hero-Worship* intimates how this might be :

“Canopus, shining down over the desert with its blue, diamond brightness (that wild, blue, spirit-like brightness, far brighter than we ever witness here), would pierce into the heart of the wild Ishmaelitish man, whom it was guiding through the solitary wastes there. To his wild heart, with all feelings in it, with no speech for any feeling, it might seem a little eye, that Canopus, glancing out on him from the great, deep eternity, revealing the inner splendor to him.”

The Argo Nebula.—This grand object is situated between Argo and Centaurus, in one of the most brilliant portions of the Milky Way. “It is not easy,” says Herschel, “for language to convey a full impression of the beauty and sublimity of the spectacle which this nebula offers as it enters the field of view of the telescope, ushered in as it is by so glorious and innumerable a procession of stars, to which it forms a sort of climax.” Miss Clerke strikingly characterizes it as “a chaotic sea of luminous billows.” It is sometimes

called the keyhole nebula from a peculiar shaped opening in its brightest part.

Among the small stars that cluster on its border is one which, though now insignificant, has had a most surprising history. From the time when Halley first observed it in 1677, until the early part of the last century, its light varied irregularly, but never exceeded that of a second magnitude star. In 1827 it increased to the first magnitude, and after fluctuating for several years, finally in 1843 burst out with a splendor rivaling that of Sirius. For nearly ten years it maintained this high rank ; then its light slowly waned till 1886, when it had passed beyond the range of unaided vision. Its partial recovery at the present time encourages the belief that its strange career is not yet ended.

CRUX, THE SOUTHERN CROSS

Then did I feel as one who, much perplext,
Led by strange legends and the light of stars
Over long regions of the midnight sand
Beyond the red tract of the pyramids,
Is suddenly drawn to look upon the sky,
From sense of unfamiliar light, and sees,
Revealed against the constellated cope,
The great cross of the south.

OWEN MEREDITH—*Queen Guenevere.*

Early References.—Although not an ancient constellation and invisible within the boundaries of the United States, yet the Southern Cross is so universally known and so remarkable a configuration of stars that it deserves mention. The earliest reference to it seems to have been in Dante's great poem, where he speaks of

The rays of the four consecrated stars.

In the lines,

O ! thou septentrional and widowed site,
Because thou art deprived of seeing these !

he seems to refer to the interesting fact that in early ages these stars were visible from the greater portion

of the northern hemisphere, but through the slow precessional change gradually shifted southward and sunk out of sight.

The voyages of discovery of the sixteenth century brought the constellation into prominence ; and to the Spanish conquerors of Mexico and South America it became a token of heaven's approbation of their endeavors to plant the faith in the wilds of the New World. Mrs. Hemans' lines in the *Cross of the South* beautifully illustrate this sentiment :

But to thee, as thy lode-stars resplendently burn
In their clear depths of blue, with devotion I turn,
Bright Cross of the South ! and beholding thee shine,
Scarce regret the loved land of the olive and vine.
Thou recallest the ages when first o'er the main
My fathers unfolded the ensign of Spain,
And planted their faith in the regions that see
Its imperishing symbol ever blazoned in thee.

Upon the first maps of the southern hemisphere South America is designated "*Terra sancte crucis*," the land of the holy cross, a circumstance still commemorated on certain Brazilian postage stamps where this constellation appears. The same suggestive device may be seen on a recent issue of New South Wales.

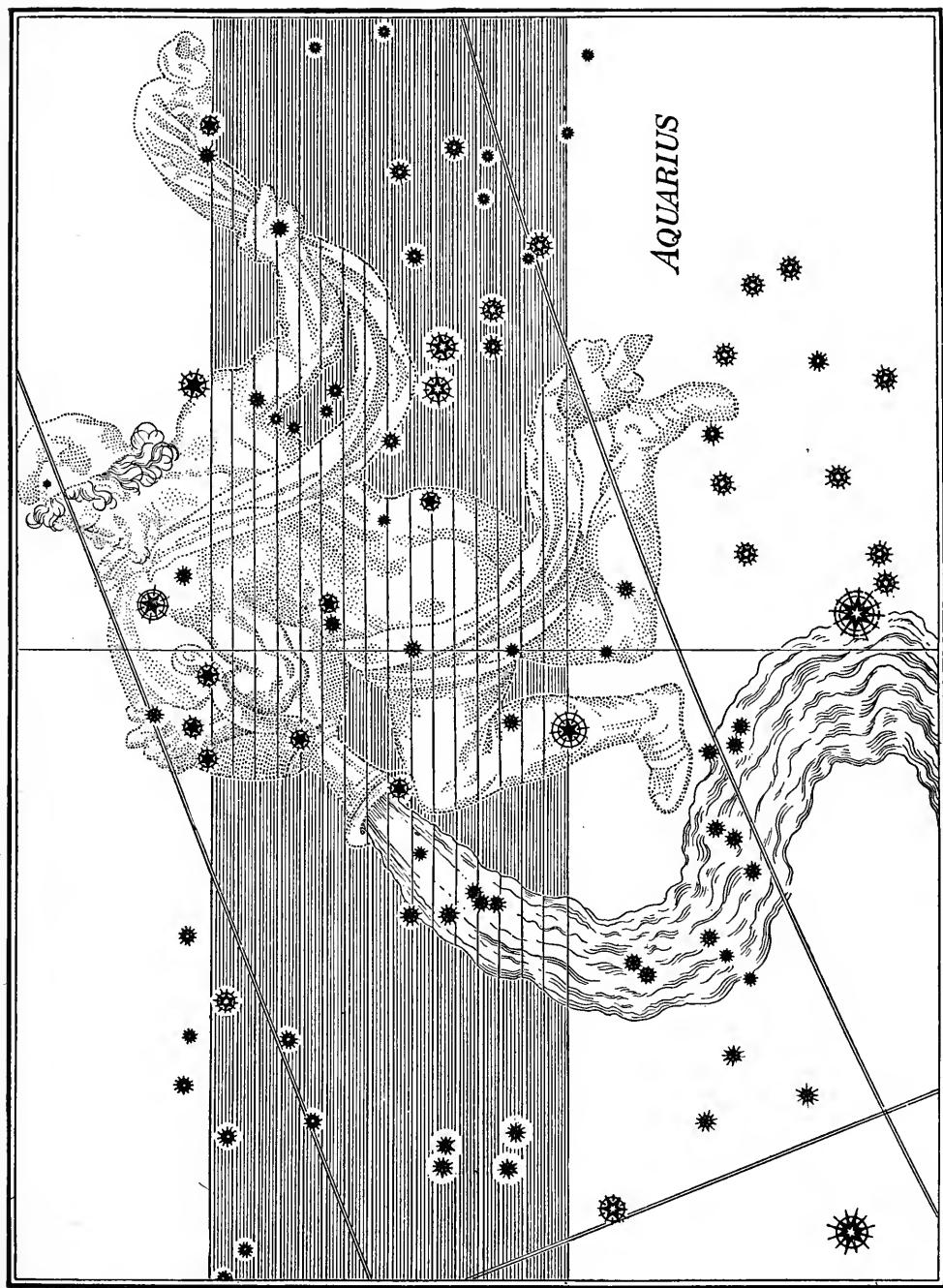
Use as a Timepiece.—Like the Great Bear to northern peoples, the Cross is the night-clock of those who dwell within and beyond the tropics. Its stars are so placed that when culminating on the meridian it stands very nearly upright. Humboldt in alluding to this says: “How often have we heard our guides exclaim in the savannahs of Venezuela and in the desert extending from Lima to Truxillo, ‘Midnight is past, the Cross begins to bend!’”

A story of the tropics, wherein this constellation figures, is told for us by Whittier in his *Cry of a Lost Soul*. The traveler floating at nightfall through the gloomy forests of the Amazon is startled by

A cry, as of the pained heart of the wood,
The long, despairing moan of solitude.

The guide crosses himself, and in a frightened whisper explains that it is the cry of a lost soul, of some infidel or heretic burning in hell. But the traveler

Lifts to the starry calm of heaven his eyes,
And lo! rebuking all earth’s ominous cries,
The Cross of pardon lights the tropic skies.



THE GALAXY, OR MILKY WAY

A broad and ample road, whose dust is gold
And pavement stars, as stars to thee appear,
Seen in the galaxy, that milky way.

MILTON — *Paradise Lost*.

The Sky-River. — From time immemorial this circling zone of light has been likened to a river, being known anciently as Eridanus, the river of heaven, into which the burning chariot of the sun was plunged after Phaëthon's mad drive ; often, too, as the shining stream or river of light, recalling Longfellow's lines :

Torrent of light and river of the air,
Along whose bed the glimmering stars are seen,
Like gold and silver sands in some ravine
Where mountain streams have left their channels bare.

Among the orientals it was sometimes the silver river, “whose fish were frightened by the new moon, which they imagined to be a hook.”

This semblance to a celestial stream is rendered even more striking where the Galaxy divides into two branches between Centaurus and Cygnus. Miss Clerke

in her *System of the Stars* says: "Involuntarily the image presents itself of a great river, forced by an encounter with a powerful obstacle to throw its waters into a double channel, lower down merged again into one. The intervening long strip of islanded rock and gravel might stand for the great rift between the branches of the sidereal stratum, which, although to the eye, owing to the effect of contrast, darker than the general sky, is in reality nowhere quite free from nebulous glimmerings. It is encroached upon by fringes, effusions, and filaments, spanned by bridges of light, and here and there half filled up by long, narrow, disconnected masses or pools of nebulæ, lying parallel to the general flow of the stream."

The Path of Souls.—Again the Galaxy is a road or pathway, our Milky Way being in fact but a translation of the classic *Via lactea*. Almost universally this has been the path by which departing souls reach the realms of the blessed, as Milton has it,

The way to God's eternal house.

So in the medieval ages it was popularly called "the way of Rome," because the Roman pontiffs controlled and guarded the only avenue of approach to the celestial

city. The Norsemen knew it as the path to Valhalla, up which went the souls of heroes who fell in battle. The belief of our North American Indians is set forth in Longfellow's *Hiawatha*, where

Many things Nokomis taught him
Of the stars that shine in heaven.

• • • • •
Showed the broad white road in heaven,
Pathway of the ghosts, the shadows,
Running straight across the heavens,
Crowded with the ghosts, the shadows,
To the Kingdom of Ponemah,
To the land of the hereafter;

or in the beautiful *Indian Fancy* of William Hamilton Hayne:

Pure leagues of stars from garish light withdrawn
Behind celestial lace-work pale as foam,—
I think between the midnight and the dawn
Souls pass through you to their mysterious home.

The Winter Street. — With the Swedish peasantry it is the “Winter Street,” probably because, while in the spring and summer evenings its pale milky light mingles with the haze of the horizon, in winter it arches magnificently across the zenith. Miss Edith

Matilda Thomas in her short poem of this name thus describes it :

Silent with star-dust, yonder it lies —
 The Winter Street, so fair and so white ;
 Winding along through the boundless skies,
 Down heavenly vale, up heavenly height.

And who are they, all unheard and unseen —
 O, who are they, whose blessed feet
 Pass over that highway smooth and sheen ?
 What pilgrims travel the Winter Street ?

Are they not those whom here we miss
 In the ways and the days that are vacant below ?
 As the dust of that street their footfalls kiss,
 Does it not brighter and brighter grow ?

Jacob's Road. — In Germany a popular title has been *Jakobs Strasse*, Jacob's Road, a simile borrowed from the ladder of his dream, on which the angels of God ascend and descend. The same idea occurs elsewhere, for Longfellow tells us,

The Spaniard sees in thee the pathway where
 His patron saint descended in the sheen
 Of his celestial armor, on serene
 And quiet nights when all the heavens were fair.

Very beautiful, noble even, are these fancies, which find in this luminous track the highway of spirits, growing, like the path of the just, ever brighter as it rises above the mists and fogs of this world, up into the glorious expanses of the ether, till it is lost in the boundlessness of the celestial realms. But grander still, shall we not say? is the reality, the true conception of this mighty circle of light, which science tells us is composed of worlds heaped on worlds, suns towering beyond suns, in a profusion that startles the imagination and awes the soul. Something of this did Longfellow see in the Galaxy :

The white drift of worlds o'er chasms of sable,
The star-dust that is whirled aloft and flies
From the invisible chariot wheels of God.

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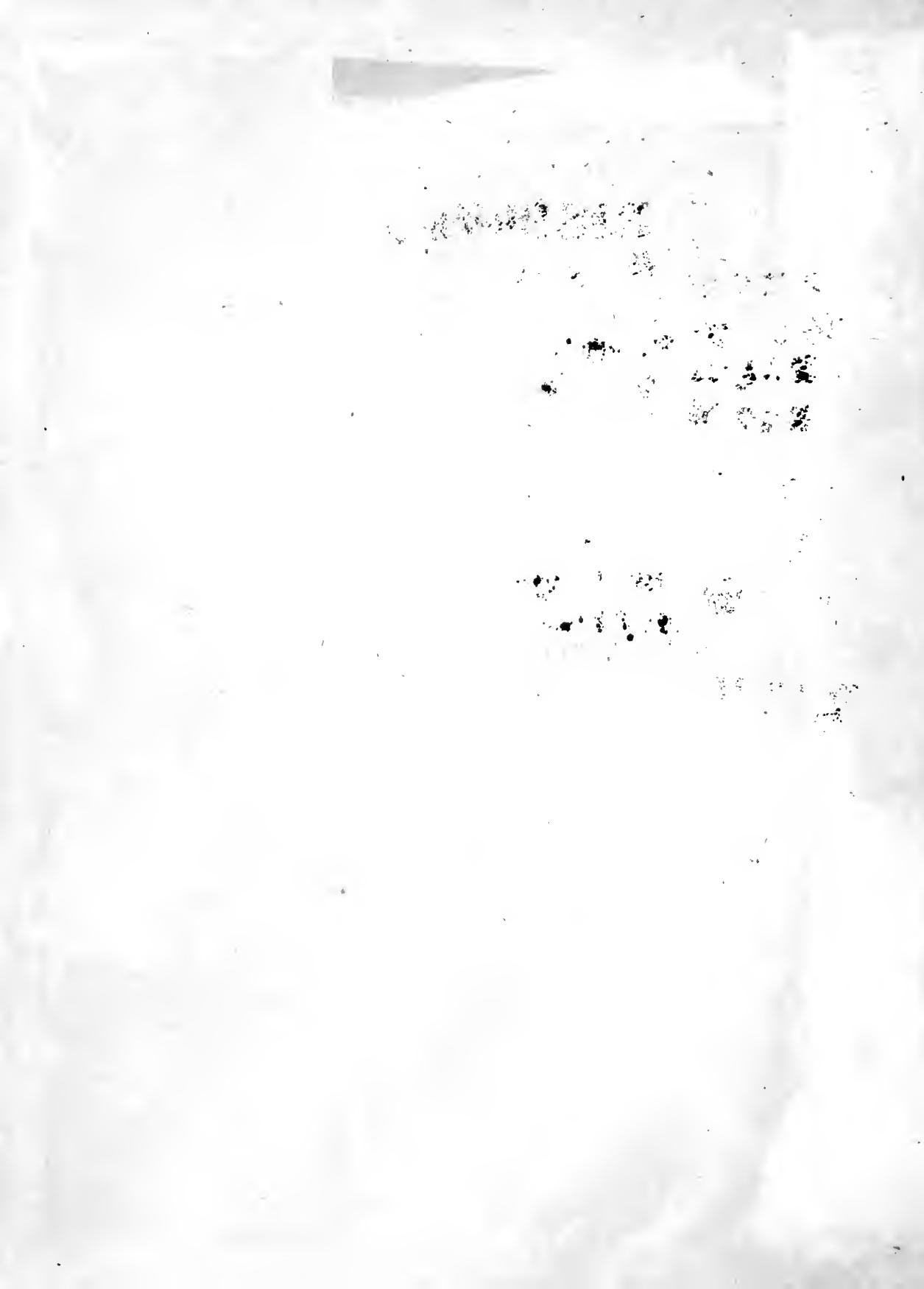
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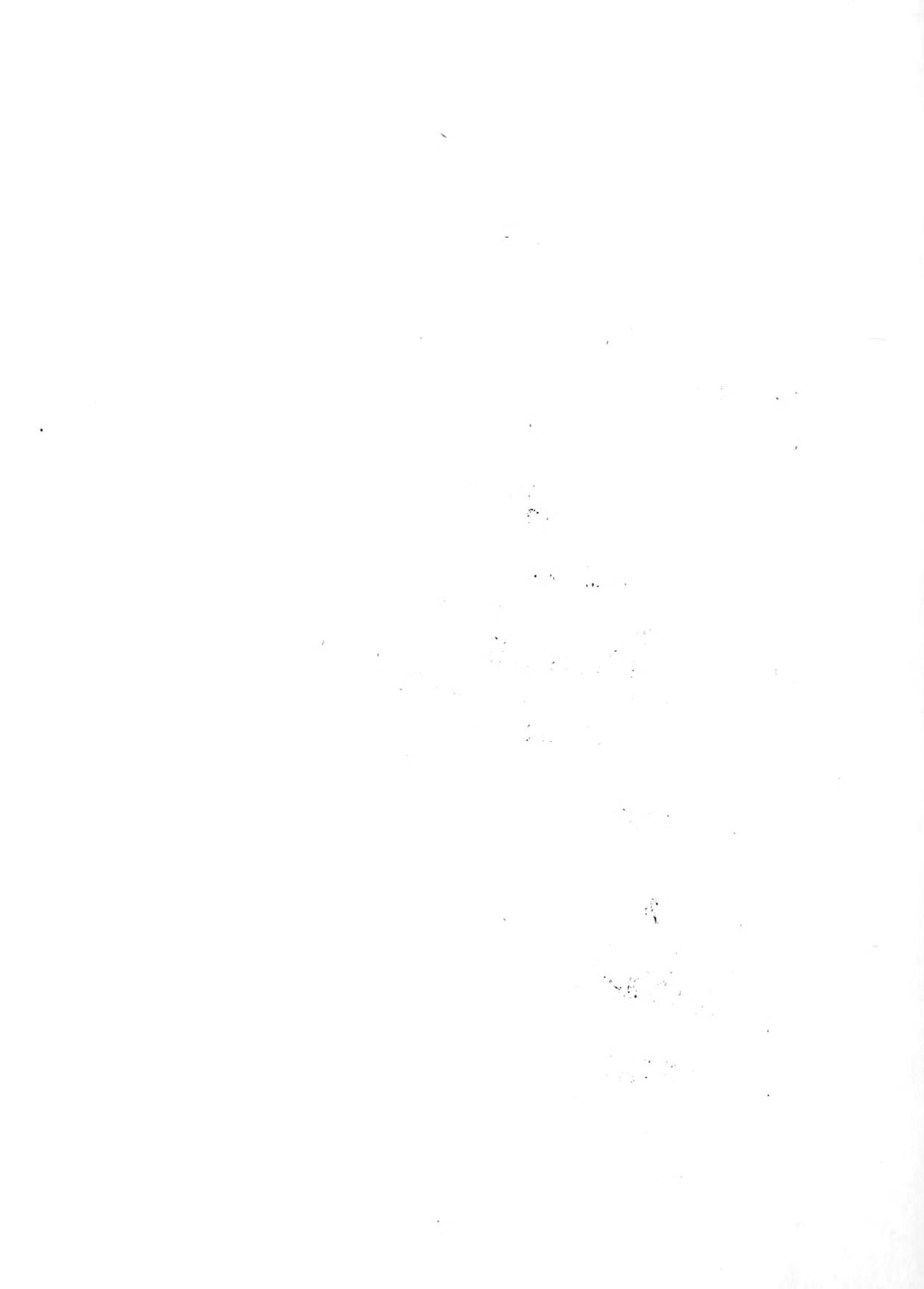
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